

**We Have a Plan...**



**GATEWAY2000**





#### Gateway 2000 Series PCs

- Intel Pentium® Pentium® Pro or Pentium® II Processors
- High-Performance SCSI, EIDE or Ultra ATA Hard Drives
- 2-D or 3-D Video Adapters With Monitor (several sizes available)
- Pre-installed High-Bandwidth Network Options
- Low Profile, Desktop or Mid-Tower Case
- Pre-loaded with MS® Windows® or Windows NT® Workstation 4.0
- Hardware Management Features
- Desktop Management Interface (DMI) L1 Compliant
- Gateway Gold® Service and Support for Desktop PCs

Prices starting at \$1379

#### Gateway Solo® Series Portable PCs

- 11.3", 12.1" or 13.3" Screens
- Intel Pentium® Processors or Pentium Processors w/ MMX™ Technology
- Hard Drives (up to 3GB on some models)
- Modular Design Accommodates Many Storage Options
- Modular CD-ROM & 3.5" Diskette Drives or Combination Drive Available On Some Models
- EZ Pad® Pointing Device & Full-Size MS Windows 95 Keyboard
- Pre-loaded with MS Windows 95
- Gateway Gold Service and Support for Portable PCs
- Gateway Solo Docking and Mini Docking Stations Available (sold separately)

Prices starting at \$1999

#### Gateway Destination

- Intel Pentium or Pentium II Processors
- Destination 31" VGA Monitor
- STB 24MB Graphics Accelerator w/
- Storage Options Include Hard Drive, 16X CD-ROM and Zip Drives
- Boston Acoustics® MicroMega™
- 3Com PCI 10/100 Twisted Pair Ethernet
- Wireless Keyboard with Integration
- Wireless Field Mouse® Remote w/
- Pre-loaded with Windows 95
- Gateway Gold Service and Support

Prices starting at \$2999

Gateway 2000 custom builds a line of desktop, portable and presentation systems. Through Custom Integration Services we can incorporate a range of components, even some not normally available through Gateway, into qualified volume orders. Call to have us custom configure systems for you.

Companies building a place on America's corporate skyline have a unique set of technology needs. No one knows that more than Gateway 2000, a *Fortune* 500 company that shot from a two-person start up in 1985 to a \$5 billion PC giant in 1996.

# Built For Your Business

That's why Gateway 2000 has developed the E-Series, a new

line of desktop PCs specifically designed to fit the broad needs of any enterprise environment. Our Custom Integration Services program can tailor the PCs to fit

the individual needs of your business. Through this innovative service, a wide range of components can be built into your PCs — even third-party software and hardware.

Our new PC line provides great benefits and helps keep costs low over the system's life cycle. We call that Value of Ownership. It happens when we hammer costs with things like high-quality PCs and smooth, flexible product transitions. At the same time, we add benefits through services including dedicated technical support and programs that forge alliances between Gateway and your internal IT department. Gateway also offers manageability features, fresh technology and high-performance products that power up productivity.

Total Cost of Ownership is just half the equation. Call Gateway 2000 Major Accounts, Inc. to see how we pump up Value of Ownership. We want to help you build your business.



8 8 8 - 8 8 8 - 0 3 8 2

[www.gateway.com](http://www.gateway.com)

Gateway 2000 Major Accounts, Inc.  
610 Gateway Drive • P.O. Box 2000  
N. Sioux City, SD 57049-2000

GSA Schedule #GS-35F-4565G

© 1997 Gateway 2000, Inc. GATEWAY 2000, "G" logo, "You've got a friend in the business" slogan, E2, P2 and Field Mouse are registered trademarks, and Gateway Gold, Gateway Solo and Dimension are trademarks of Gateway 2000, Inc. The Intel Inside Logo, Intel and Pentium are registered trademarks and INTEL is a trademark of Intel Corporation. All other brands and product names are trademarks or registered trademarks of their respective companies. All prices and configurations are subject to change without notice or obligation. Please do not include shipping or applicable sales tax. Major Gateway 2000 products are custom engineered to Gateway 2000 specifications, which may vary from the retail versions of the software and/or hardware in functionality, performance or compatibility. Gateway 2000 Major Accounts, Inc., is a wholly owned subsidiary of Gateway 2000, Inc. "The Destination 31" monitor is covered by a one-year limited warranty. Call or write for a free copy.



# Security gaps top list of NT user concerns

By Laura DiDio

SECURITY, DOMAIN management and lack of support for disk quotas are the top three concerns of Windows NT administrators, according to a recent survey.

"Windows NT00ls," a Clearwater, Fla., newsletter, found that lingering security concerns topped the list among the 1,500 respondents, followed by all aspects of network management, said Stu Sjowerman, the newsletter's editor.

"Although most users agreed that NT's security is adequate, they said security gaps occur when network administrators don't fully understand the relatively new operating system and fail to properly implement NT security rights."

"Every major operating system has its trial by fire, and it's now Microsoft's turn with Windows NT. We expect this to continue for the next six to 12 months, until the Active Directory ships," Sjowerman said.

Users and analysts said the limitations of Windows NT haven't impeded its deployment. Windows NT Server shipments grew 85% last year, according to International Data Corp. in Framingham, Mass.

Ten users interviewed by Computerworld generally agreed with the findings of the survey.

"Windows NT just hasn't grown up yet," said Richard Palmer, a computer programmer at Texas Instruments, Inc. in Dallas, which currently runs NT Server 3.5. It will install NT

Workstation on about 30,000 desktops companywide.

Managing Windows NT Domain Name System is particularly problematic for TI, because it has tens of thousands of users across the enterprise.

"It's a real pain," Palmer said. "Microsoft might argue otherwise, but the trustee relationships just don't give us as fine-tuned control and management capabilities. What really vexes me is that we had all these capabilities from our old Digital Equipment Corp. VMS operating system to years ago."

## SUPPORT FOR DISK QUOTAS

Palmer and Matt Rice, vice president and senior network manager at USTrust Boston, a bank in Cambridge, Mass., also want Microsoft to provide built-in support for disk quotas.

Although several third-party add-on disk quota packages are available, Microsoft doesn't yet support disk quotas in either Windows NT 3.51 or 4.0. That means a power user could consume enough disk space to have an impact on server operations, slowing it or, in a worst-case scenario, crashing the file server.

Rice listed support for disk quotas, a bona fide hierarchical directory service and a suite of proven enterprise management tools as "must-haves" before his bank would install NT as its enterprise operating system.

Microsoft officials have said that those issues will be resolved when Active Directory ships next year. □

## NT NUISANCES

What are your main issues/challenges in managing your Windows NT network?

Security - 23%	
Software updates/Systems Management Server - 17%	
User account management - 17%	
Proactive performance management - 16%	
Lack of support for disk quotas - 15%	
Difficulty managing NT Domain Name System - 14%	
Backups - 11%	
Remote management - 9%	
Windows Internet Name Service - 9%	
Buggy service packs - 8%	

Note: 1,500 Windows NT network administrators; multiple responses allowed.

Source: "Windows NT00ls" newsletter, Clearwater, Fla.



Jim Perry's stolen credit card is sent to his electronic game cards. Corporate Strategies, page 68

Is professional use of credit cards still in their future? Business, Managing, page 77

Up to date with the latest news. High. The Internet, page 99

## In this issue

### NEWS

- 3 OpenVMS users get a boost as IBM ports its MQSeries middleware to the Digital platform.
- 4 After years of disappointment, some observers see hope for the wireless data industry.
- 6 Internet service providers a proposed 'net privacy standard for having free user confidentiality safeguards.
- 8 The quick advance of deregulation in the electric power industry has thrust it into a crucial role.
- 9 The U.S. Postal Service unveils a java-based online built-mail form to save customers time.
- 10 M-commerce should embrace their LAN connection options before coming to the client.
- 12 AT&T's reported merger talks with SBC Communications are seen as AT&T's last-ditch effort to win local market share.
- 14 Comdex/Spring '97 promises little hype and lots of talk about Windows NT, "push" technology and multimedia.
- 20 The impact of telecommunications reform and new networking technologies highlight this week's SuperComm '97.
- 26 B&A Desktop application pioneer Dan Ecklin says Java is overhyped and industry titan Microsoft isn't so bad.

### OPINION

- 32 The long-winded arrival of smart cards in the U.S. is welcome news, Marylann Johnson writes.
- 100 More viruses pale next to potential Java security problems, David Courtney says.

### TECHNICAL SECTIONS

#### SERVERS & PCs

- 41 Built-in AddressBook's multimedia application for travelers, using kiosks based on Pentium II PCs.

- 41 Multimedia shapes with huge applications turn to Hitachi's Skyline mainframes for more MIPS.

#### SOFTWARE

- 47 Delta environment stand up-front input from end users to meet business needs.
- 47 Twelve-to-beats up its electronic software distribution "wrapper" to address concerns about system conflicts.

#### THE ENTERPRISE NETWORK

- 53 Strip & Shag's conditions and EOL system automatically pays bills that meet predetermined guidelines.

- 63 New World's SupersiteNet Message installs a Java-based Internet to link it to the art world.

#### THE INTERNET

- 69 Internet targets site on its Web search engine to users' interests based on their search tendencies.

- 69 Reveal & Show-then browser from Traveling Software and Datacube provide convenient ways to share Web archives.

#### CORPORATE STRATEGIES

- 69 Secure access to data in data warehouses is a near goal of business value.
- 69 Delta Health System gives six programmers flexibility and incentive to finish its year 2000 project early.

### FEATURES

#### INNOVATION

- 70 Teleconferencing may be a magnet for recruiting, but it can cause pain at the office, Lefebvre Allen writes.

### ETC

- Company Index 115
- Editorial Letters 58
- How to contact CW 116
- Inside Users 119
- Stock Ticker 115





Jim Ferry's casino rebuilt its network to use electronic game cards. Corporate Strategies, page 69

IS professionals let off steam in letters to their former bosses. Managing, page 77

John Bequarts uses "push" technology to keep customer service levels high. The Internet, page 59

## In this issue

### NEWS

- 3 **OpenVMS users get a boost** as IBM ports its MQSeries middleware to the Digital platform
- 4 **After years of disappointment**, some observers see hope for the wireless data industry
- 6 **Internet experts lambaste** a proposed "net privacy standard" for having few user confidentiality safeguards
- 8 **The quick advance** of deregulation in the electric power industry has thrust it into a crucial role
- 9 **The U.S. Postal Service unveils** a Java-based online bulk-mail form to save customers time
- 10 **IS managers should examine** their LAN connection options before committing to thin clients
- 12 **AT&T's reported merger talks** with SBC Communications are seen as AT&T's last ditch effort to win local market share
- 14 **Comdex/Spring '97 promises** little hype and lots of talk about Windows NT, "push" technology and multimedia
- 20 **The impact** of telecommunications reform and new networking technologies highlight this week's SuperComm '97
- 28 **GSA: Desktop application pioneer** Dan Bricklin says Java is overhyped and industry titan Microsoft isn't so bad

### OPINION

- 32 **The long-overdue** arrival of smart cards in the U.S. is welcome news, Maryfran Johnson writes
- 119 **More viruses** pale next to potential Java security problems, David Courtney says

### TECHNICAL SECTIONS

#### SERVERS & PCs

- 41 **Delta Airlines tests** a multimedia application for travelers, using kiosks based on Pentium II PCs

- 41 **Mainframe shops** with huge applications turn to Heatch's Skyline mainframes for more MIPS

#### SOFTWARE

- 47 **Data warehouses need** up-front input from end users to meet business needs
- 47 **TextDrive beefs up** its electronic software distribution "wrapper" to address concerns about system conflicts

#### THE ENTERPRISE NETWORK

- 53 **Step & Shop's workflow** and EDI system automatically pays bills that meet predetermined guidelines
- 53 **New York's Guggenheim Museum** installs a Novell-based intranet to link it to the art world

#### THE INTERNET

- 59 **Infoseek targets ads** on its Web search engine to users' interests based on their search tendencies
- 59 **Review: Off-line browsers** from Traveling Software and Dataweb provide convenient ways to store Web archives

#### CORPORATE STRATEGIES

- 69 **Sears seeks to take** its data warehouse to a new level of business value
- 69 **Delta Health Systems** gave six programs flexibility and incentives to finish its year 2000 project early

### FEATURES

#### MANAGING

- 78 **Telecommuting may** be a magnet for recruiting, but it can cause pain at the office, Lellian Allen writes

#### ETC.

- |                   |     |
|-------------------|-----|
| Company Index     | 116 |
| Editorial/Letters | 32  |
| How to contact CW | 116 |
| Inside Lines      | 120 |
| Stock Ticker      | 115 |

# Security gaps top list of NT user concerns

By Laura DiDio

SECURITY, DOMAIN management and lack of support for disk quotas are the top three concerns of Windows NT administrators, according to a recent survey.

Windows NT's Clearwater FL newsletter found that lingering security concerns topped the list among the 1,500 respondents, followed by all aspects of network management, said Stu Silverman, the newsletter editor.

Although most users agreed that NT's security is adequate, they said security gaps occur when network administrators don't fully understand the relatively new operating system and fail to properly implement NT security rights.

Even major operating system bugs still lie in wait, and Microsoft's turn with Windows NT Web site due to customers for the next six to 12 months, until the Active Directory ships, Silverman said.

Users and analysts said the limitations of Windows NT haven't impeded its deployment. Windows NT Server shipments grew 86% last year, according to International Data Corp. in Framingham, Mass.

Ten users interviewed by Computerworld generally agreed with the findings of the survey.

"Windows NT just hasn't gotten up yet," said Richard Palmer, a computer programmer at Texas Instruments, Inc., in Dallas, which currently runs NT Server 3.51. It will install NT

Workstation on about 40,000 desktops/computers.

Managing Windows NT Domain Name System is particularly problematic for IT because of the tens of thousands of users across the enterprise.

It's a real pain, Palmer said. Microsoft might argue otherwise, but the trustee relationship just didn't give us fine-tuned control and management capabilities. What really vexes me is that we had all these capabilities with our old Digital Equipment Corp. VMS operating system 10 years ago.

#### SUPPORT FOR DISK QUOTAS

Palmer and Matt Rice, vice president of server network manager at USTJ Boston, a bank in Cambridge, Mass., also want Microsoft to provide built-in support for disk quotas.

Although several third-party add-on disk quota packages are available, Microsoft doesn't yet support disk quotas in either Windows NT 3.51 or 4.0. That means a power user could consume enough disk space to have an impact on server operations, slowing it or in a worst-case scenario crashing the file server.

Rice listed support for disk quotas, a bona fide hierarchical directory service and a suite of proven enterprise-management tools as "must-haves" before his bank would install NT as its enterprise operating system.

Microsoft officials have said that those issues will be resolved when Active Directory ships next year. □

### NT NUISANCES

What are your main issues/challenges in managing your Windows NT networks?

- |  |     |
|--|-----|
| Security                                   | 21% |
| Software updates/Systems Management Server | 17% |
| User account management                    | 17% |
| Proactive performance management           | 16% |
| Lack of support for disk quotas            | 15% |
| Difficulty managing NT Domain Name System  | 14% |
| Backups                                    | 11% |
| Remote management                          | 11% |
| Windows Internet Name Service              | 9%  |
| Buggy service packs                        | 8%  |

Base: 1,500 Windows NT network administrators; multiple responses allowed

Source: "Windows NT's" newsletter, Clearwater, Fla.

## Spam, spam...

**A**t of a sudden, it seems all the computing world wants to talk about is spam.

No, we're not referring to the glistening, porcine lunch meat here. "Spam" doesn't make a dime off its phenomenal success. We're talking about the term for unwanted bulk junk e-mail. To hear the critics complain, you'd think spamming is as much a threat to our way of life as global warming.

With all due respect to the affected, I say the problem isn't junk mail. Heck, a well-crafted debate key can clean up an AOL in-box in 10 seconds. The real problem is legitimate spam, the stuff you can't just throw in the trash. Like those four dreaded words in an e-mail from a colleague about a subject that you're ostensibly supposed to care about: "What do you think?"

Enough! I don't want to think my mind was bludgeoned free of thought until just now. Now I must kill off precious brain cells composing a coherent reply to your message so I can preserve my professional dignity.

**The real enemy is messages from your friends.**

And how about the CC of Death? You know, the message from one of your colleagues to 15 people in a group requesting input on what to do about the rise in Argentinean copper prices.

Unsurprisingly, five yahoos on the distribution list will hit the "reply to all" button when they respond, generating 75 from 6 e-mails about a topic you all wish had never come up in the first place. Exponential spam.

Finally, there's the Attachment from Hell: "Be assured that you can read this. I have attached copies of the document in Word 97 format, Word 6 format, Lotus WordPro format, ASCII text, a link to our home page and a version in Chinese. With luck, you should be done downloading them by tonight."

With luck, your keyboard will be run over by a Buick. Junk e-mail from strangers is a manageable problem. The real enemy is messages from your friends.

What do you think?

Paul Gillin, Editor  
Internet: paul.gillin@com.com

## THE FIFTH WAVE BY RICH TENNANT



© Rich Tennant at thewack.com

## Few outsourcing year 2000 work

► Users are opting to do projects in-house

By Robert L. Scheier  
and Thomas Hoffmann

WHAT if they gave a panic and nobody cared?

That's the question facing many year 2000 service providers, who say the huge wave of demand they had expected by now just isn't happening. Analysts users may be snapping up Cobol and assembler programmers, but so far they are dragging their feet on outsourcing year 2000 work.

"People who give a lot of the 'Chicken Little' speeches" had warned of a capacity crunch, and David Reingold, vice president of marketing and strategic services at Computer Horizons Corp., a Mountain Lakes, N.J.-based information technology services vendor. "Everyone is afraid it is coming, but I haven't seen it. We have 3,000 people in the U.S. and only about 700 are fully engaged in the year 2000," he said.

### SLOW DEMAND

Demand for outside consultants is sluggish, according to vendors, analysts and users, for the following reasons:

- Many companies have been slow to tackle the expensive, complicated task of making sure applications can recognize the year 2000.
- Many corporations are still in the assessment stage, which requires fewer people than when fires get under way.
- Many users plan to replace old applications rather than fix them. The latter approach is fueled by software developers, some of whom have told users they don't plan to upgrade certain applications to year 2000 compliance.
- The limited demand can also be explained, in part, by the learning curve many information systems managers face with the year 2000.

But the situation is expected to change as firms move into conversion and testing. "We still think the major staffing crunch is going to come later this year and will continue into 1998 and 1999," said Matt Heide, a Chicago-based analyst at Gartner Group, Inc.

The most severe shortages will also shift, observers say, from the Cobol programmers needed to do the actual conversion work to experienced software

ware testers to check the converted systems and project managers to coordinate the conversion, testing and reintegration of the multiple components that make up applications.

For many managers, the year 2000 assessment stage is progressing with "gitchas." Every time Pete Westlake dives into the year 2000 problem, "it scares the bejesus out of me," said the director of information services at Orlando (Fla.) Regional Healthcare System.

**Every time Pete Westlake dives into the year 2000 problem, "it scares the bejesus out of me," said the director of information services, Orlando Regional Healthcare System**

Three months ago, when Westlake and his staff began their year 2000 assessment, Westlake figured the problem was limited primarily to off-the-shelf applications that vendors would have to repair. But as he "peels back the onion," Westlake said he is finding bigger problems that they will have to tackle themselves.

Those problems include 5,000 to 25,000 data-sensitive graphical user interface screens used for a clinical order-entry system that is expected to take his staff five programmer-years to convert. At daunting as those figures sound, analysts say they are typical of the amount of work many companies face.

"The more we dig, the more work we're finding has to be done," Westlake said.

The University of Toledo

(Ohio) "is part of the evidence" of organizations that are keeping their year 2000 work in-house, said Mike Esbin, director of the school's millennium project. Most of the university's administration systems are third-party packages from Systems and Computer Technology Corp. in Malvern, Pa., which Esbin expects to make its software compliant.

The university is also using the year 2000 as an opportunity to discard up to 80% of its aging Cobol, Fortran, and PL/I applications, which represent up to 800,000 lines of code, Esbin said. That should leave the school with fewer than 100,000 lines of housegrown mainframe code to convert, Esbin said.

An increasing number of organizations seem inclined to tackle year 2000 in-house, according to users and vendors. "I think a lot of [companies] are putting off launching conversion and testing until 'off and doing it themselves,'" said Donald G. Hill, a project manager at WizCom in Garden City, N.Y.

Instead of making all of its Cobol IMS and assembler programs "100% compliant," WizCom is using automated tools to put together enough knowledge into the programs to make them recognize year 2000, Hill said.

Nevertheless, most customers are far from desperate, said John Fuller, project executive for year 2000 services at the Windward Group, Inc., a Los Gatos, Calif., systems integrator.

"If you had a service provider come in and say, 'Sign on the bottom line, and it will cost you some money' to reserve a place on their year 2000 schedule, the customer would tell you to get lost, let alone bid."

Year 2000 bug a multidimensional puzzle for programmers. Page 47

### Come visit our Web site @ Computerworld

► NOW IT'S THE EX-BOSSES' TURN: Who gave the disgruntled IT masses a chance to sound off in "Letters to your ex-boss?" Now it's time to hear from the management side. What would you like to say to your ex-employees? [www.computerworld.com](http://www.computerworld.com)

► BODEN FE: Beginning Thursday, check out our new exclusive—the Computerworld Bookshelf. We will have reviews of the latest technology titles and links to online bookdealer Books Home, so you can easily order what you like. [www.computerworld.com](http://www.computerworld.com)

Daily news updates: (800) 346-7262

"If you need to know what's going on in the industry but aren't near your PC, get a recorded update at our toll-free number."

## Modem maker answers fears of 56K buyers

By Mandy Blodgett

U.S. Robotics last week announced a plan to ease users' fears that its 56K bit/sec. modems might not win the battle to set the industry standard.

U.S. Robotics announced a three-point "buyer protection" plan—including a promise to upgrade for free its modems and other 56K bit/sec. products to standards set by the International Telecommunication Union next year.

Some industry observers saw the U.S. Robotics announcement as an answer to that recent announcement that MicroSoft Corp. was testing 56K bit/sec. technology from Rockwell Semiconductor, Inc. and Lucent Technologies, Inc. for The Microsoft Network.

U.S. Robotics has been in a race with Rockwell and Lucent

to establish market share by rushing to market incompatible 56K bit/sec. modems.

"I think what U.S. Robotics is trying to combat here is the problem that users are worried

about getting stuck with modems that don't meet standards when they are set," said Kieran Taylor, an analyst at TeleChoice, Inc. in Verona, N.J. "Both sides are trying to garner as much market share as they can before standards are set."

### THE MICROSOFT FACTOR

Taylor said the Microsoft announcement is a blow to U.S. Robotics.

"Any time Microsoft backs and implements something, it tends to become the standard," Taylor said.

In addition to its promise to upgrade its 56K bit/sec. modems free of charge in the event a standard is set that is incompatible with its technology, U.S. Robotics also announced it is offering purchasers of new modems one month of free Internet service, worth up to \$45, if the user's Internet service provider is using U.S. Robotics technology. The company announced a 30-day "satisfaction guaranteed" return policy. □

# IBM to release OpenVMS middleware

By Tim Ouellette

DOORS COULD SOON open between OpenVMS shops and the rest of the enterprise.

Level8 Systems, Inc. in Montreal completed the OpenVMS port for IBM, a common practice to get MQSeries on as many platforms as possible.

This summer, IBM will release Version 2.2 of its MQSeries middleware for Digital Equipment Corp.'s venerable OpenVMS platform.

MQSeries is messaging middleware that lets high-end appli-

cations on many platforms send secure data requests and response messages to one another.

"OpenVMS has been a significant gap in our platform coverage," acknowledged Colin Osborne, IBM's MQSeries business manager.

Version 2.2 has already been available on some other platforms for more than a year.

Users running OpenVMS on VAX and Alpha machines will gain the capability to use MQSeries for basic queries to other application platforms.

involved of just for high-level transactions.

In Version 2.2, when an OpenVMS application issues a basic query to an AIX server, for example, MQSeries will forgo its normal security and redundancy requirements in favor of speedy response times for those low-level queries.

Although Maynard, Mass.-based Digital does have its own middleware, the dominance of

IBM in the data center may cause some users to select MQSeries.

"A lot of the big [IBM] MVS mainframe shops already use MQSeries, and most of these shops also have some VAX/VMS shops," said Anne Thomas, an analyst at Patricia Seybold Group in Boston. Now the two platforms can be integrated with one messaging product, she said. □

## Hackers play with Windows NT flaw

By Laura DiDio

WINDOWS NT and Windows 95 users beware.

The latest Windows NT vulnerability involving the NetBus Port 139 was discovered three weeks ago by the security and hacker communities. Microsoft responded quickly and issued a hot fix for Windows NT 3.51 and 4.0 within a week. The patch can be downloaded at Microsoft's Web site ([www.microsoft.com](http://www.microsoft.com)).

But Peter Tippet, president of the National Computer Security Association in Carlisle, Pa., said he isn't certain how many users have actually downloaded the patch and installed it on their systems to plug the security gap.

"Having a fix is one thing; getting the users to invoke it is entirely another matter."

—Peter Tippet, National Computer Security Association

Based on our experience, only a small minority of users proactively installs security patches," Tippet said. □

## Off-line browser gets 'pushed' out of business

► Individual, Inc. to focus on webcasting

By Patrick Thibodeau

THE MOVE BY Netscape Communications Corp. and Microsoft Corp. into the push technology arena has meant the end of the road for one off-line browser.

Individual, Inc., Freelader's parent company, pulled the plug on the business unit last week and said it would instead concentrate on webcasting applications.

Burlington, Mass.-based Individual provides customized news content gleaned from thousands of sources to corporations and individuals via its NewsPage service.

"It's pretty much clear that anyone in the off-line browser [business] is going to have to have an exit strategy, with the advent of [Channel Definition Format] (CDF) and Netcaster from Microsoft and Netscape, respectively," said John McCarthy, an analyst at Forrester Research, Inc. in Cambridge, Mass.

"Individual is a news integrator, so they're going back to that business... They're going to leverage what Microsoft is providing; it's just part of the shakeout caused by Netscape and Microsoft," he said.

Microsoft's proposed CDF standard would allow users to

download only certain pages and images from a site, among other features. Individual said it will concentrate on working with webcasting providers, including Microsoft's Active Desktop, to distribute its news content.

In addition to ending its off-line browser, Individual eliminated 25 positions as a result of its decision to cut off Freelader. Individual acquired Freelader 11 months ago. □

# Spread Know-how

"Hey! Let's do something for ourselves!" some IS organizations seem to be saying. While some shops are creating knowledge management applications for non-IT functions, such as sharing "best practices," they're also beginning to build them for their own use.

Managing, page 73



MICHAEL GOODMAN

## WHAT'S THE DIAGNOSIS

Cisco's NSM suite helps define policies that govern the availability and performance of network connections

Module	Diagnoses	Function	Price
Connectivity Service Manager	Bay and Cisco routers	Views, analyzes and troubleshoots router traffic flow	\$7,500 for 50 routers
Performance Service Manager	Bay and Cisco routers	Tunes performance and models proposed changes	\$7,500 for 50 routers
LAN Service Manager	Cisco Catalyst switches	Views, analyzes and troubleshoots virtual LAN connections	\$5,000 per domain
WAN Service Manager	StrataCom WAN switches	Views, analyzes and troubleshoots switched WAN connections	Not available (product not shipping)

## Self-healing networks

► Cisco software automatically spots and responds to problems

By Patrick Dryden

CISCO SYSTEMS, INC. this month will ship automated software that takes a big step toward the Holy Grail of self-healing networks, according to beta testers and analysts.

Network managers' crave tools to help ensure service quality for their users, so they won't need an army of experts to maintain complex internetworking configurations.

But so far, products just report performance statistics or demand lots of operator intervention.

### INFORMATION OVERLOAD

"We would down to information by probing the 35,000 entry points into one of our global networks," said beta tester Jim Parkhurst, senior staff engineer at MCI Communications Corp. in Washington.

Instead, Cisco's overhauled

**"It's more cost-effective to put your money into silicon than into gray matter."**  
Jim Parkhurst, MCI

software provides "a proactive operational support tool to help us predict where problems will happen as well as react to failures," Parkhurst said.

For example, the tool kit can verify that adequate bandwidth is available on all network circuits before adding the load of multimedia traffic, said another beta tester, who asked to remain anonymous.

"This tool analyzes the integrity of the circuits to help identify service complaints and connectivity problems," the beta tester said.

Cisco has gained "a powerful edge in the service-level management battle" by figuring out how to define and maintain the performance policies that govern traffic flow, said to John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo.

### END-TO-END TRACING

San Jose, Calif.-based Cisco revamped the router modeling tools it got when it acquired NetScout Technologies, Inc. in November. Now the suite can handle network configurations through Cisco Catalyst 5000 LAN switches, as well as routers from Cisco and Bay Networks. Inc. StrataCom, Inc.'s WAN

switches come later.

The result, called NetScout Service-level Management suite (Cisco NSM), helps define service policies and track end-to-end performance networkwide. Then it diagnoses problems and suggests how to fix them.

"This fills out the management aspect lacking in so many products touted today, which just present and track information about service levels," said Mark Bouchard, an analyst at Meta Group, Inc. in Westport, Conn. "Others may give you an alarm about a violation, but they can't show you what went wrong."

### THE RIGHT MIX

The bad news is that users must have the right combination of routers, switches and management software in their networks to get the benefits, according to John Morency, a principal at The Registry, Inc., a network consultancy in Newton, Mass.

Cisco's advantage comes through detailed understanding of what goes on in its own devices and software, Bouchard said.

This suggests greater benefits for predominantly Cisco shops," he said.

Competitors such as 3Com Corp. plan to guarantee service levels for specific users.

3Com later this year will integrate its Transcend management tools with service-level monitoring software from InfoVista Corp. in Redwood City, Calif., to enforce service policies for traffic flowing through its internetworking gear. □

## Upbeat on unplugged

► Analysts see rapid growth ahead for wireless data services

By Mindy Biedgert

AFTER YEARS of disappointment, some industry observers are once again sounding cautiously optimistic about the future of wireless.

"We think the wireless data industry is really going to grow in the next year or two," said Tom Esperson, an analyst at The Yankee Group in Boston.

What is behind the newly upbeat assessment? "Prices are going to go down, devices are coming along, [and] these things will converge," Esperson said.

Giga Information Group in Cambridge, Mass., projects the number of wireless data users will explode from 1 million to more than 9 million by 2000.

### GOING WIRELESS

The release of handheld devices running Microsoft Corp.'s Windows CE operating system with some wireless capabilities is introducing the concept of wireless to a wider audience.

Other devices, such as two-way pagers and smart phones—which combine cellular voice with Internet access and electronic-mail capabilities—have also been introduced in recent months, with more to come.

The popularity of the Internet also has users exploring wireless intranet and Internet access services for road warriors. At first, access will be delivered at dial-up speeds, but higher-speed access is expected by year's end. "The Internet is really moving things along," said Andrew Seybold, editor of the "Outlook on Communication and Com-

puting" newsletter in Boulder Creek, Calif.

But some observers aren't believers in the resurgence of wireless data communications.

"It's going nowhere and won't for a few years," said Iain Gillett, an analyst at Link/IDC consulting group in Austin, Texas. "The good news is that I know the killer application for wireless data. The bad news is that it is voice. What people want is a combination of voice and data—not just data."

Wireless data now is mostly relegated to vertical industry applications, such as field service, dispatching, warehouse communications and transportation. The technology hasn't reached a wider audience yet because of a continuing lack of standards among the different wireless protocols, limited service availability and cost issues.

"We still have a long way to go" for broader corporate acceptance, said Mike Cooper, director of telecommunications at Boston Edison Co.

The utility uses a combination of wireless data services from IBM Mobile Data Systems L.P. in Woodbridge, N.J., and Cellular Digital Packet Data Service for its field service workers. The portables can connect to both networks.

"By using competing services, we can get better prices by pitting one company against another," Cooper said.

Stan Vick, director of informational services at the Honeywell-Bell Ham Co. of Georgia in Atlanta, says he is a big believer in wireless LANs. The company uses Novell technology from Lucent Technologies, Inc. to connect in-store workstations without cable. "I think we saved \$50,000 in not having to wire those stores," Vick said. □

### The status of two key wireless communications technologies:

#### Cellular Digital Packet Data (CDPD)

- Deployed in 130 markets covering 50% of the U.S.
- AT&T wireless phones its PocketNet smart phone with cellular voice and E-mail will save CDPD
- Hasn't lived up to its promise
- Mostly deployed in vertical markets

#### Digital personal communications services

- Currently being rolled out with voice communications
- Carriers expect to add data in the next year or two



With every eye  
minute of every hour  
of every day help desk  
fire-fighters  
are all over

Is this a great time, or what?



# Privacy standard draws fire

## ► Vendor group proposes Internet guidelines

By Mich Wagner

INTERNET EXPERTS last week lambasted a proposed 'net privacy standard and said the proposal has few actual safeguards for protecting users' confidential information.

But supporters such as Saul Klein, vice president of marketing at Firefly Network Inc. in Cambridge, Mass., say the proposal could provide World Wide Web site administrators with a mechanism for adhering to voluntary guidelines for respecting users' privacy. Firefly is an electronic-commerce software vendor that helped forge the standard.

Reaction from Web site administrators to the proposed standard, pitched by a consortium of vendors, was mixed. The coalition of 60 electronic-commerce companies, including Netscape Communications Corp., is expected this week to submit a proposed standard for gathering private information about users on the Web to the World Wide Web Consortium, which sets Web standards.

The technology could make Web surfing more convenient

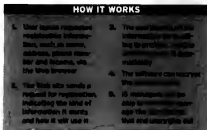
for users and help provide assurances about privacy, said Dave McGough, executive director of the Association of Online Professionals in Alexandria, Va.

A voluntary approach, such as that proposed in the standard, is better than government regulation, according to John Thum, vice president of marketing at Fingerhut Cos. in Minneapolis, Minn. He helps manage Fingerhut's Web marketing efforts.

"The companies that are serious about participating in electronic commerce will, in the long run, have to comply with some sort of voluntary standards," he predicted.

Proponents of the standard said it should be easy and inexpensive to implement. But Eoin McGoughlin, online services director of Tower Records, West Sacramento, Calif., said he was concerned that it would prove expensive to implement in reality.

"Do we have to go back and do a lot of tinkering with the database and programming to make use of the elements? My database people are always yelling at me about 'referential integrity' every time I make a



Source: Firefly Network, Inc., Cambridge, Mass.

change in the site," McGoughlin said.

"In the real scheme of things, this is a crock," said Tom Loane, vice president and chief information officer at Alamo Rent A Car, Inc. in Fort Lauderdale, Fla. Loane said he doesn't see the need for the software. Alamo already takes measures to protect users' privacy, and the cost of developing registration systems hasn't been high, he said. "I spend more on pizza in a year," he said.

The Open Profiling Standard is a set of programming interfaces. It was designed to let developers write applications that add the digital equivalent of a business card to Web browsers.

It will streamline the process of obtaining personal information typically solicited from users who register at Web sites.

### NO RETYPING

It will let users store the information permanently on their hard disks and submit the data in a few keystrokes and mouse clicks, rather than having to retype answers to the same questions each time they sign on to a Web site.

Site administrators, meanwhile, will be required to ask users for information and explain how the site will use the information. That is the key part of the privacy protection in the standard, Klein said.

The proposal was designed to address a real problem on the Internet. Site administrators complain that the Web falls short as a marketing medium because there isn't an efficient way to gather information about people who visit their site.

For example, nearly two-thirds of Internet users said they don't register at sites because they don't trust Web site administrators, and more than one-third of users said registration is too time-consuming, according to a survey by the Graphics, Visualization & Usability Center at the Georgia Institute of Technology in Atlanta.

"A lot of people in the industry would like to put this forward as a panacea" for privacy problems on the Web, said David Sobel, a legal counselor to the Electronic Privacy Information Center, a privacy advocacy group in Washington. He said the proposed standard won't eliminate the need for legislative and legal recourse in the event that personal information

Standard profiling software could be available by year's end in the form of plug-ins and add-ons to make existing browsers and servers comply with the profiling standard, Klein said. □

Search engine Web site targets ads to users' preferences. Page 59

## It's still lonely at the top for women

By Laura DiDio

WOMEN ARE increasingly becoming influential in the information technology field, but they still don't get the executive promotions and pay that their male counterparts do.

That's the conclusion of a research paper released by Women in Technology International (WTI) on the eve of the group's Silicon Valley Summit conference this week in Santa Clara, Calif.

The WTI study found that women have a "major impact as both influencers and purchasers of technology," have a growing presence online and own 7.7 million businesses.

Yet WTI's survey of 500 women in the IT field found that only 29% said they have an equal chance at becoming their employer's CEO.

Furthermore, women in IT make 83 cents for every dollar earned by male IT employees.

"Women represent a high

percentage of the technology and science workforce but only 2% of the executives," said Carolyn Leighann, executive director of WTI in Sherman Oaks, Calif.

"Technology will continue to attract the best women only if it gives them the opportunity to achieve their highest potential," Leighann said.

### DOWN WITH TOXICISM

That sentiment was echoed by one woman IS manager who posted on @Computerworld's online forum on women's issues. "Companies who are serious about promoting women into IT have to do it on a much larger scale. Toxicism is almost as bad as full-scale discrimination," she said.

WTI, along with companies such as Coopers & Lybrand and organizations such as the Women and Leadership Conference, are aiming to change all that events that raise the level of awareness and encourage net-

working. More than 2,000 women attended last month's Women and Leadership Council event in Boston on how to break the glass ceiling.

Cynthia Neff, human resources manager at IBM's Almaden Research Center in San

Jose, Calif., a co-sponsor of the event, said it got positive results and feedback after sending 500 women to last year's WTI conference.

### MANY APPROACHES

Companies such as Coopers & Lybrand in New York are working hard to boost women into the upper ranks via conferences, networking and formal mento-

ring programs. Half of the accounting and consulting firm's 17,000 employees are women, but only 8% of its partners are women.

"You can't be a woman and not have had experience with gender bias," said Iris Goldfine, vice chairman of Coopers & Lybrand's national human resources department.

Goldfine said the biggest problem confronting women today is that senior management "doesn't want to acknowledge that [gen-

der discrimination] is a bona fide business issue."

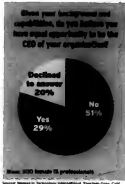
The men are at various stages of enlightenment. It wasn't until we got over 200 [Coopers & Lybrand] women in a room with several top male managers and they heard women collectively voice the same sentiments that the men started to get it," Goldfine said.

### SUGGESTED CHANGES

The women sent management a list of recommendations, such as eliminating any bias in project assignments and partner add-on and establishing a formal mentoring program for women and minorities.

Despite the initiatives, both Goldfine and Jayne Burke, a partner in charge of Coopers & Lybrand's Computer Assurance Services group in Minneapolis, acknowledged that promotions don't happen soon enough for some.

"We still lose our top-rated women at an alarming rate — much faster than we lose men," Burke said, because the women aren't "promoted internally at the same rate as men." □



Source: Women in Technology International, San Jose, Calif., Oct.

# Oracle7 vs SQL Server

Features	Oracle7	Microsoft SQL Server
• Runs from Laptop to Mainframe	YES	NO
• Cross Platform Support	90+	NO (NT Only)
• Proven VLDL Support	YES	NO
• Cluster Support (Scalability and High Availability)	YES	NO
• Multiprocessor Scalability	From 1 to 400+ processors	From 1 to 8 processors
• RPP Support	YES	NO
• Parallel Query	YES	NO
• Star Queries	YES	NO
• Adaptive Indexes	YES	NO
• Symmetric Replication	YES	NO
• Page-level Locking	YES	NO
• PL/SQL Multidimensional Interpolation	YES	NO
• Video Storage and Playback	YES	NO
• Text Storage and Search	YES	NO
• Spatial Data	YES	NO

Oracle7.™ From laptop to mainframe. From NT to MVS. From relational data to all data. From data warehousing to OLTP to electronic commerce. From client/server to the Web. Think about it and then call Oracle at 1-800-633-1071, ext. 11342. Or find us on the Web at <http://www.oracle.com>

**ORACLE®**  
Enabling the Information Age™

Comparison between Oracle7 Parallel Server and Microsoft SQL Server based on manufacturers' published data.  
©1997 Oracle Corporation. All rights reserved. Oracle is a registered trademark and Oracle7 and Enabling the Information Age are trademarks of Oracle Corporation.  
All other company and product names are the trademarks of their respective owners.

# Deregulation puts onus on IS

► Competition will demand improved customer service via technology

By Justin Hibbard

Deregulation of the U.S. electric power industry is moving faster than expected, putting information systems at the helm of new ventures to help power companies survive in a competitive marketplace.

That's the consensus among observers and industry insiders who are preparing for deregulation of the \$135 billion industry. The California Public Utilities Commission last month voted to open the state's \$30 billion electricity market to competition on Jan. 1—four years earlier than anticipated. New York, Massachusetts and Illinois also are preparing to deregulate.

Moving quickly, Southern California Edison Co. last month hired its first chief information officer, Mubvash Yandi, who also serves as vice president and CIO at Southern California Edison's parent company, Edison International.

"My arrival as CIO in the first time Edison has given this level of recognition to information technology," Yandi said. "I'm joining at the strategy table with all the officers who are making decisions."

Part of Yandi's duty is to "focus on new ways of creating economic value," she said. The company is considering offering customers core services such as billing over the Internet.

Use of Internet technology among utilities has exploded in the past two years, and growth is

on the Internet and intranets, the consultancy found.

But building Internet-based applications will require IS departments to persuade upper management to provide extra funding. "The nature of this business is that information technology investment has not been a real priority," said Sam Cannady, director of information systems at the global sales, marketing and energy trading units at PacificCorp. "I think that's going to change."

Dataquest in San Jose, Calif., predicts that annual IT spending in the power industry will rise from \$7 billion in 1995 to \$14 billion in 2000.

Power companies will have to invest in new information services if they hope to compete in a marketplace in which a basic level of service won't be enough to retain customers, said Brad Holcombe, a partner in the utilities practice at Andersen Consulting in Chicago.

"The winners are going to be those that can bundle some added services," Holcombe said.

Already, companies are springing up to provide bundled services to electric companies. They include the following:

- KN Energy, Inc. in Denver and PacificCorp in Portland, Ore., this year started a joint venture called Enable, which will sell information services to other utilities. Those utilities can then sell the services to customers.

- Enable will offer Simple Choice, a package that includes automatic meter reading, Internet access, satellite television, cellular telephone and long-distance service. Consumers would be able to select from one bill. Enable provides optional billing, call-center and sys-

tems integration for utilities that sell the package.

- FirstPoint Utilities Solution, a unit of Portland General Corp. in Portland, will handle electricity billing and customer service for the city of Palm Springs, Calif., when the California market opens next year. Portland General established FirstPoint when the company's leaders realized that information services would become a key differentiator for the entire marketplace, said Walt Pollock, a senior vice president at FirstPoint. □



The company's first CIO must focus on new ways of creating economic value

expected to accelerate with deregulation. As many as 1,200 companies will have World Wide Web sites by year's end, up from 40 in 1995, according to Warren B. Causey Ltd., a consultancy in Kenton, Ga.

More than 50 utilities already perform core business func-

## NEC pitches more bang for the buck

By April Jacobs

PACARD BELL-NEC's latest addition to its Pentium Pro processors, 12.5M to 64M bytes of Error Checking and Correcting memory. The Data Precision 70 systems also feature a RAID controller. It costs less than \$9,000.

NEC's servers are certified to run Windows NT and Novell, Inc.'s NetWare.

Dell's offerings in that same marketplace range from \$6,500 to more than \$20,000.

NEC's push is part of an overall strategy to penetrate small to medium-size businesses in a relatively short time frame, said Amir Ahar, an analyst at International Data Corp. □

## SHORTS

### Intel warns of lower profits

Intel Corp. warned last week that second-quarter profits and revenue will fall below expectations, mostly due to weak demand in Europe. The announcement triggered a sharp decline in Intel's stock price on Friday. Intel said it expects second-quarter revenue to be 5% to 10% below first-quarter revenue of \$4.4 billion. But that would still be a strong increase over last year's second-quarter revenue, which totaled \$4.62 billion.

### Hundt resigns from FCC

Federal Communications Commission Chairman Reed Hundt resigned last week, following several immediate calls during which the U.S. and world telecommunications markets liberalized rules for competition. Hundt, who led the FCC for almost four years, chaired the commission as it began implementing last year's Telecommunications Deregulation and Reform Act.

### Pretty Good ruling

The U.S. Commerce Department last week allowed Pretty Good Privacy, Inc. to export its 128-bit encryption software to overseas offices of its U.S. customers. The San Mateo, Calif., software company is the first to ever approve to export this level of encryption for uses other than securing financial transactions. The approval means firms can encrypt information without govern-

ment access to the data, but the software is barred from Cuba, Iran, Iraq, Libya, North Korea, Sudan and Syria.

### SGI wins legal battle

A California judge last week dismissed a securities fraud class-action suit against Silicon Graphics, Inc. (SGI). If upheld, the decision could make it more difficult for disappointed investors to sue public companies. The case is the first since a federal law attempting to limit the filing of frivolous class-action suits was passed.

### Informix sues over hearing

The courtroom battle between Informix Corp. and Oracle Corp. began last week in a Portland, Ore., courtroom, with Informix claiming that Oracle fished 13 employees and their core knowledge away from Informix's Menlo Park, Calif., offices.

Oracle's response was that the 13 employees don't work on the same type of projects that they did in their former positions and that Informix knew the employees were unhappy.

### Informix Software/Intel deal

Informix Software, Inc. and Intel Corp. this week plan to announce a deal to link Informix's Universal Server database with Intel's MMX multimedia chip technology.

Within 30 days, Informix will ship a developer's kit for building MMX-enabled database plug-in modules for Universal Server. The two companies are jointly recruiting software vendors to develop plug-ins.

### Pact for shrink-wrapped apps

By July, a group of major vendors of shrink-wrapped applications will agree on a specification that will let popular PC-based applications exchange data with one another, even if they are on different platforms, via a form of secure electronic mail. IBM is pushing its MQSeries tool kit as a way to bring the mainframe-level security and communications of MQSeries to shrink-wrapped Windows NT applications. Other vendors in the group include Intel Corp., Microsoft Corp. and Hewlett-Packard Co.

**SHORT TAKES** Terisa Systems, Inc. next week plans to make available a tool kit for building the World Wide Web standard for encryption, the Secure Sockets Layer, into thin clients, including handheld computers. . . . The National Association of Securities Dealers, Inc. has purchased 37 bytes of storage from EMC Corp. in Hopkinton, Mass., to attach to its San Microsystems, Inc. and Tandem Computers, Inc. servers. . . . Gateway 2000, Inc. in North Sioux City, S.D., next month will ship a network-ready PC for less than \$1,000. Without a monitor, and in large quantities, the units cost less than \$500.

# Bulk-mailers get online aid

## Postal Service puts rate calculator on its Web site

By Sharon Gaudin

THE U.S. POSTAL SERVICE is trying to make life easier for its half-million bulk-mail customers by taking them online.

The online move comes in the guise of electronic forms that can be downloaded from the Postal Service's World Wide Web site ([www.usps.gov](http://www.usps.gov)). The Java-based forms will take basic information, plug in the proper rates and deduct the fee from a customer's trust account, said Nate Zuckerberg, program manager for marketing systems at the government agency.

### NO MORE RATE SEARCHING

The automatic calculations, although they still need to be printed and brought to a post office, keep users from having to search rate charts and scratch out math problems, saving an estimated 30% to 40% of a customer's usual time, Zuckerberg said.

"It's phenomenally helpful," said Gene Del Polito, president of the Advertising Mail Marketing Association (AMMA), a nonprofit organization based in Washington. "It eliminates a lot of what is typically very labor-intensive work. It provides the mailer a much more convenient way to get their bulk mail out."

"When you're at risk of losing some of your key revenue streams, you better figure out how to do what you do smarter and more cost-effectively."

Zuckerberg said he started working on the project about a year ago. Bulk mailers represent 54% of the agency's revenue. Bulk mail, which can range from 200 to millions of pieces, includes everything from church bulletins to national magazines.

Offering online help is an important move for the Postal Service, which has been under heavy competitive fire from not only Federal Express Corp. and United Parcel Service of America, Inc., but also many electronic-mail services, Del Polito said.

"When you're at risk of losing some of your key revenue streams and you have a Congress leech to subsidize you, then you better figure out how to do what you do smarter and more cost-effectively," Del Polito said.

The Postal Service is working on an electronic form that could be submitted

online instead of having to be printed out and carried to a local branch. Zuckerberg said the form is in the pilot stage.

Users download the electronic forms onto their computer, and an icon appears on their screen or scroll bar. When they

need a form, they simply print one out. Zuckerberg said the form is downloaded about 400 times per week.

Zuckerberg built the application using Sun Microsystems, Inc.'s Java, a platform-independent language, because he

needs it to run on any of his customers' computers, whether they be Windows 95-based PCs or Macintoshes.

"The Postal Service has been criticized in the past, but ... they get pretty high marks for this," said consultant Michael F. Cavanagh, executive director of the National Postal Policy Council in Alexandria, Va. "They should not close post offices because of this, but it provides a valuable service for people." □

## A Journey Begins with

From 1972 to 1997, Innovation Data Protection has been creating leading backup and recovery solutions. Beginning with the original backup server—FCB (Fast Copy Backup)—Innovation Data Protection's products have evolved into today's ultra high-speed, reliable backup management solutions for MVS, and Open Systems Data. Our service solutions provide superior performance over PC or other maintenance-based backup systems. By embracing technological advances, Innovation Data Protection continues to provide innovative software solutions for the next century for our 2000+ customers. A Data Protection goal is being met!

1981-82 ADR

DASD Management facility with Archive, Incremental and Application Backups

INNOVATION DATA PROTECTION

Corporate Headquarters: 675 Palmyra Avenue, East Pitt, New Jersey 07033 • (908) 801-7100 • Fax: (908) 801-7100 • E-mail: [info@innovationdata.com](mailto:info@innovationdata.com) • <http://www.innovationdata.com>

European Office	France	Germany	Netherlands	United Kingdom	Rest of Europe
01-47-48-15-15	01-48-48-0210	020-488-1888	0181-905-1385	01-30-636-1888	

# Thin clients may drive network upgrades

By Bob Wallace

HOWEVER ALLURING they may find the recent spate of thin client announcements, IS managers need to examine their LAN connection options before buying and deploying the devices.

3Com Corp.'s announcement last week of a 10/100M bit/sec. Fast Ethernet motherboard chip for thin clients is an example. The chip adds a higher speed alternative to 10M bit/sec. Ethernet and 16M bit/sec. Token Ring units, obviating the need to pull apart the devices and up-

grade to faster chips on motherboards as bandwidth demands increase.

"You can expect far more network traffic from thin clients, so it makes sense to go with [units] with 10/100 chips," said Neal MacDonald, an analyst at Gartner Group, Inc. in Stamford, Conn. "It's a

no-brainer to go with the 10/100, since the difference in cost with the 10M-bit chips is insignificant."

Users planning to deploy thin clients are examining bandwidth issues.

"It makes more sense to go with the 10/100 [functionality] because it lets you scale to meet rising bandwidth needs," said Joe Galena, a consultant at Dundup Tree Corp. in Buffalo, N.Y., a early network computer user. "Ten megabits is enough in some cases, but in others, you need more capacity," he said in reference to heavier data traffic and more bandwidth-intensive applications.

Roy Peterson suggests information systems managers think bandwidth before they think thin clients.

"Clearly, bandwidth issues become much more important with thin clients than with PCs," said Peterson, information technology manager at Wisconsin Indianhead Technical College at Shell Lake, Wis. "And if you're a Token Ring user with an eye toward Ethernet technology, you'll want to look for a migration path."

## THERE GOES THE BENEFIT

The expanded bandwidth is also key to users of thin clients because upgrading chips could nullify one of the purported benefits of thin clients — easy administration and maintenance.

"The idea behind the network computer is to reduce the need for expensive, time-consuming and largely unavailable technical support," said David Andrews, managing partner at D. H. Andrews Group in Cheshire, Conn. "If users need technical support for chip upgrades, the appeal of thin clients will be diminished. User perception of them would suffer."

The LAN speed that thin clients support is also a big issue. That is because thin clients don't have floppy drives or hard disks and are expected to generate much more network traffic than traditional PCs. Therefore, they require faster LAN connections. □

**1 BLURRED ELEPHANT**  
**2 ELEPHANT DRIVING A CHARGE MASSIVE**  
**3 ELEPHANT ON ROLLERBLADES**  
**4 ELEPHANT FACING A BULLET TRAIN**  
**5 ELEPHANT DRIVING A CHARGE MASSIVE**  
**6 ELEPHANT DRIVING A CHARGE MASSIVE**  
**7 ELEPHANT DRIVING A CHARGE MASSIVE**  
**8 ELEPHANT DRIVING A CHARGE MASSIVE**  
**9 ELEPHANT DRIVING A CHARGE MASSIVE**  
**10 ELEPHANT DRIVING A CHARGE MASSIVE**  
**11 ELEPHANT DRIVING A CHARGE MASSIVE**  
**12 ELEPHANT DRIVING A CHARGE MASSIVE**  
**13 ELEPHANT DRIVING A CHARGE MASSIVE**  
**14 ELEPHANT DRIVING A CHARGE MASSIVE**  
**15 ELEPHANT DRIVING A CHARGE MASSIVE**  
**16 ELEPHANT DRIVING A CHARGE MASSIVE**  
**17 ELEPHANT DRIVING A CHARGE MASSIVE**  
**18 ELEPHANT DRIVING A CHARGE MASSIVE**  
**19 ELEPHANT DRIVING A CHARGE MASSIVE**  
**20 ELEPHANT DRIVING A CHARGE MASSIVE**  
**21 ELEPHANT DRIVING A CHARGE MASSIVE**  
**22 ELEPHANT DRIVING A CHARGE MASSIVE**  
**23 ELEPHANT DRIVING A CHARGE MASSIVE**  
**24 ELEPHANT DRIVING A CHARGE MASSIVE**  
**25 ELEPHANT DRIVING A CHARGE MASSIVE**  
**26 ELEPHANT DRIVING A CHARGE MASSIVE**  
**27 ELEPHANT DRIVING A CHARGE MASSIVE**  
**28 ELEPHANT DRIVING A CHARGE MASSIVE**  
**29 ELEPHANT DRIVING A CHARGE MASSIVE**  
**30 ELEPHANT DRIVING A CHARGE MASSIVE**  
**31 ELEPHANT DRIVING A CHARGE MASSIVE**  
**32 ELEPHANT DRIVING A CHARGE MASSIVE**  
**33 ELEPHANT DRIVING A CHARGE MASSIVE**  
**34 ELEPHANT DRIVING A CHARGE MASSIVE**  
**35 ELEPHANT DRIVING A CHARGE MASSIVE**  
**36 ELEPHANT DRIVING A CHARGE MASSIVE**  
**37 ELEPHANT DRIVING A CHARGE MASSIVE**  
**38 ELEPHANT DRIVING A CHARGE MASSIVE**  
**39 ELEPHANT DRIVING A CHARGE MASSIVE**  
**40 ELEPHANT DRIVING A CHARGE MASSIVE**  
**41 ELEPHANT DRIVING A CHARGE MASSIVE**  
**42 ELEPHANT DRIVING A CHARGE MASSIVE**  
**43 ELEPHANT DRIVING A CHARGE MASSIVE**  
**44 ELEPHANT DRIVING A CHARGE MASSIVE**  
**45 ELEPHANT DRIVING A CHARGE MASSIVE**  
**46 ELEPHANT DRIVING A CHARGE MASSIVE**  
**47 ELEPHANT DRIVING A CHARGE MASSIVE**  
**48 ELEPHANT DRIVING A CHARGE MASSIVE**  
**49 ELEPHANT DRIVING A CHARGE MASSIVE**  
**50 ELEPHANT DRIVING A CHARGE MASSIVE**  
**51 ELEPHANT DRIVING A CHARGE MASSIVE**  
**52 ELEPHANT DRIVING A CHARGE MASSIVE**  
**53 ELEPHANT DRIVING A CHARGE MASSIVE**  
**54 ELEPHANT DRIVING A CHARGE MASSIVE**  
**55 ELEPHANT DRIVING A CHARGE MASSIVE**  
**56 ELEPHANT DRIVING A CHARGE MASSIVE**  
**57 ELEPHANT DRIVING A CHARGE MASSIVE**  
**58 ELEPHANT DRIVING A CHARGE MASSIVE**  
**59 ELEPHANT DRIVING A CHARGE MASSIVE**  
**60 ELEPHANT DRIVING A CHARGE MASSIVE**  
**61 ELEPHANT DRIVING A CHARGE MASSIVE**  
**62 ELEPHANT DRIVING A CHARGE MASSIVE**  
**63 ELEPHANT DRIVING A CHARGE MASSIVE**  
**64 ELEPHANT DRIVING A CHARGE MASSIVE**  
**65 ELEPHANT DRIVING A CHARGE MASSIVE**  
**66 ELEPHANT DRIVING A CHARGE MASSIVE**  
**67 ELEPHANT DRIVING A CHARGE MASSIVE**  
**68 ELEPHANT DRIVING A CHARGE MASSIVE**  
**69 ELEPHANT DRIVING A CHARGE MASSIVE**  
**70 ELEPHANT DRIVING A CHARGE MASSIVE**  
**71 ELEPHANT DRIVING A CHARGE MASSIVE**  
**72 ELEPHANT DRIVING A CHARGE MASSIVE**  
**73 ELEPHANT DRIVING A CHARGE MASSIVE**  
**74 ELEPHANT DRIVING A CHARGE MASSIVE**  
**75 ELEPHANT DRIVING A CHARGE MASSIVE**  
**76 ELEPHANT DRIVING A CHARGE MASSIVE**  
**77 ELEPHANT DRIVING A CHARGE MASSIVE**  
**78 ELEPHANT DRIVING A CHARGE MASSIVE**  
**79 ELEPHANT DRIVING A CHARGE MASSIVE**  
**80 ELEPHANT DRIVING A CHARGE MASSIVE**  
**81 ELEPHANT DRIVING A CHARGE MASSIVE**  
**82 ELEPHANT DRIVING A CHARGE MASSIVE**  
**83 ELEPHANT DRIVING A CHARGE MASSIVE**  
**84 ELEPHANT DRIVING A CHARGE MASSIVE**  
**85 ELEPHANT DRIVING A CHARGE MASSIVE**  
**86 ELEPHANT DRIVING A CHARGE MASSIVE**  
**87 ELEPHANT DRIVING A CHARGE MASSIVE**  
**88 ELEPHANT DRIVING A CHARGE MASSIVE**  
**89 ELEPHANT DRIVING A CHARGE MASSIVE**  
**90 ELEPHANT DRIVING A CHARGE MASSIVE**  
**91 ELEPHANT DRIVING A CHARGE MASSIVE**  
**92 ELEPHANT DRIVING A CHARGE MASSIVE**  
**93 ELEPHANT DRIVING A CHARGE MASSIVE**  
**94 ELEPHANT DRIVING A CHARGE MASSIVE**  
**95 ELEPHANT DRIVING A CHARGE MASSIVE**  
**96 ELEPHANT DRIVING A CHARGE MASSIVE**  
**97 ELEPHANT DRIVING A CHARGE MASSIVE**  
**98 ELEPHANT DRIVING A CHARGE MASSIVE**  
**99 ELEPHANT DRIVING A CHARGE MASSIVE**  
**100 ELEPHANT DRIVING A CHARGE MASSIVE**

We wanted to tell you how our rapid access to large amounts of data maximizes your computing investment (without putting a majestic beast through the indignities of a photoshoot).

Who needs visual cliché when you've got the world's fastest, most reliable, high capacity storage solutions? The fact is, MAXSTRAT Gen5 storage servers are scalable to over 800 gigabytes. That's ten times more capacity than other enclosures. Here's the last part: a data transfer rate of 250 megabytes per second. Which is 15 times faster than competing storage products. ▶ Gen5 is serious centralized storage. ▶ When it comes to today's data intensive applications, no other solution delivers better throughput and access for leading platforms including Sun, SGI/Cray, Fujitsu, NEC and IBM. Clearly, MAXSTRAT sets the new storage standard. ▶ In some ways, we're like a storage investment protection policy. You see, thanks to MAXSTRAT's compatibility, the Gen5 only gets better if you change or add workstation or supercomputer suppliers. ▶ What makes us the ideal solution? Maybe it's because storage is our ONLY business. We're the specialists. Which brings to mind a few visual possibilities like a...ah, we'll spare you. ▶ To get the most out of your computing investment, call us at 408-383-1600.



**MAXSTRAT**

## Net chip plans

The following thin-client manufacturers last week said they plan to release networking chips for their devices:

- ▶ IBM has announced plans for Ethernet and Token Ring chips, but it hasn't detailed plans for anything faster such as 10/100 Fast Ethernet or Asynchronous Transfer Mode.
- ▶ 3Com Corp. in Santa Clara, Calif., is banking primarily on the 10/100 Fast Ethernet chip, but it will explore the possibility of a 10M bit/sec. chip.
- ▶ Intel Corp. has announced that a 10/100 Fast Ethernet chip can be used on motherboards for thin clients, such as the 3Com chip.
- ▶ Sun Microsystems, Inc. said it also has a 10/100 chip but wouldn't provide details on planned chips.

— Bob Wallace

# Monkey on your back #55: If you're into Windows NT, why not find the company that's most on top of it?

DIGITAL has consistently been first to market with added-value deliverables for Windows NT.\* No other company can offer so much:

**The DIGITAL/Microsoft® alliance.** Our unique, long-term alliance has given us more hands-on experience with Microsoft than any other vendor. For instance, we now have more trained and certified Windows NT experts than anyone else. And we already have over 900,000 seats for Microsoft Exchange under contract. It's this kind of service, support and experience that gives you a distinct competitive edge.

**Remarkable reliability.** DIGITAL was the first to bring fault-tolerant disaster-tolerant computing and maximum availability to the Windows NT market. In fact, we're already on our second release of DIGITAL Clusters for Windows NT while others are still working on their first.

**Extraordinary enterprise expertise.** DIGITAL also boasts two decades of experience in enterprise-level computing and multivendor integration. Which probably explains why we're the only company offering middleware that allows seamless interoperability between Windows NT, Open VMS™ and UNIX.\*

**A great future.** Nobody has a longer-term vision for Windows NT than DIGITAL. Our full line of Windows NT-optimized products across Intel® and Alpha platforms already offers more headroom than any other. What's more, DIGITAL will be the first to bring the practical use of Very Large Memory™ to the Windows NT market as well as 64-bit architecture with Microsoft's next release of Windows NT.

So if you're running Windows NT, go with the company that's putting the most into it. For more information, call 1-800-DIGITAL, or visit our Web site at [www.alliance.digital.com/microsoft](http://www.alliance.digital.com/microsoft).

**Microsoft digital**

**A L L I A N C E**  
**FOR ENTERPRISE COMPUTING**

\*Digital Support Corporation (DSC) 386/486, the 68000, 68010, and 68010 Super are trademarks of Digital Equipment Corporation. VMS is a registered trademark of the VAX Corporation. Microsoft and Windows NT are registered trademarks of Microsoft in the U.S. and other countries. IBM is a registered trademark in the U.S. and other countries. SunSoft (Sun) Company Ltd.

# AT&T tries to make \$50B local call

► Possible merger with SBC to face FCC hurdles

By Kim Girard

AT&T CORP.'s reported merger talks with SBC Communications, Inc. are being seen as a last-ditch effort by AT&T to gain an edge in the local market.

Observers said the \$50 billion-plus merger, if pursued, faces tough regulatory hurdles because it appears to contradict the spirit of competition intended by the Telecommunications Deregulation and Reform Act of 1996.

"This is a sign that AT&T has failed to do anything on the local level," said Dan Taylor, a senior analyst at Aberdeen Group, Inc. in Boston. "There's really a lack of leadership at AT&T, and when you start losing leadership, it speaks volumes."

AT&T so far has focused its local strategy on reselling services. Rural MCI Communications Corp. is investing millions in its own local network. And while AT&T has been battling the regional Bell operating companies (RBOCs) in court over how much it will pay to resell their lines, Taylor said, competitors such as WinStar Communications and Teleport Communications Group in New York have quietly been nabbing AT&T's potential business customers.

For example, Staten Island University Hospital in New York uses AT&T for long-distance services, but it is unlikely that the hospital will use the company for local services, said Patrick Carvey, vice president and chief information officer. Car-

vey said he didn't think AT&T could be flexible enough and offer the same kinds of face-to-face services that Teleport gives him now.

Through SBC, AT&T could acquire a local partner to help it compete — and at the same time bypass tedious negotiations with RBOCs to resell services over their lines.

But Jim Olson, a lawyer and former chief of the Federal Communications Commission's competition division, said an AT&T/SBC merger would be a "different animal" than previous telecommunications deals. AT&T will face many more barriers to making this deal work — including convincing antitrust officials that AT&T's company would have a fair playing field for wireless business.

"The whole reasoning behind

the divestiture in the first place was to break apart the former monopoly, and this would reconstitute this in seven states," Olson said. A consent decree led to the divestiture of seven RBOCs from AT&T in 1984.

SBC, which recently bought Pacific Telesis Group, can't enter the long-distance market until its Southwest and California local markets are open to competition.

Tom Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J., said AT&T could be "floating a trial balloon." If the deal is shot down, AT&T would be confident that no other long-distance competitor is likely to succeed in merging with an RBOC company, Nolle said.

An AT&T spokesman said it is in company policy not to comment on rumors. □

## WHAT THEY BRING TO THE TABLE

Company	Market value	Employees
AT&T	\$56.5B	130,000
SBC Communications	\$52B	96,000

# Intel fires back in DEC patent suit

By April Jacobs

IT'S WAR, no doubt about it.

Three weeks after Digital Equipment Corp. filed suit against Intel Corp. for alleged patent infringements, Intel has responded by asking for its intellectual property back from Digital.

Intel filed suit in U.S. District Court after requests for Digital to return documents and materials related to future processor technology were denied, according to Chuck Mulloy, a spokesman for Intel.

He said the documents and materials were given to Digital under a non-disclosure contract so Digital could develop new technology.

As part of the agreement, Intel can ask for them back at any time, Mulloy said.

He said Intel and Digital have been working together as customers of each other's products for more than 30 years. But he said the relationship has been fundamentally changed by Digital's patent suit. "Before, it was a customer relationship. Now, it's an adversarial relationship," Mulloy said.

Intel is a major supplier of chips to Digital, which buys Pentium, Pentium Pro and Pentium II chips for its computers.

Mulloy wouldn't speculate on what will happen when the contract runs out in September.

In a written statement, Digital general counsel Thomas Siekman said Intel's suit was without merit, unjustified — and expected.

"They are asking us to return to them materials which they shared with Digital and other system vendors who design Intel processors into their products. We also find it curious that they are asking for damages from a company that buys products from them," Siekman said. Intel also said Intel's suit is a thinly veiled attempt to make Digital customers nervous about its chip supply. □

# Virtual tape silos cram more data in less space

By Tim Ouellette

DATA CENTERS are about to get more elbow room.

IBM this month will ship the Virtual Tape Service (VTS), a hardware/software bundle that will let users cram more data in giant robotic tape silos.

That means information systems managers can cut the number of cartridges and space-hogging tape silos they have to buy and maintain.

Vendors have already slashed the size of mainframes and disk subsystems while adding more power. Observers say tape storage needs to follow the downsizing trend, because far more data is stored on tape than on expensive disk arrays.

## FLOOR SPACE A PREMIUM

"You buy more silos — that is floor space gone. And floor space is valuable these days," said Charles Turnerville, IS operations manager at the Louisiana Department of Labor in Baton Rouge. "We always thought by getting rid of the larger disk arrays, we would have more floor space. But there are always

new things coming in to the data center."

That's because companies want to hold on to their archival data longer for data mining and analysis. And, at the same time, the data center is taking on responsibility for new projects, such as managing high-volume voice-mail systems.

The problem is that the usual method for moving data to tape cartridges wastes space by leaving much of each tape empty.

"A lot of tape is underutilized, even almost empty," said John McArthur, an analyst at International Data Corp. in Framingham, Mass. "A lot of places can't contain all the tape libraries if they keep growing as they are now. Virtual tape solves this problem and improves performance."

IBM's Virtual Tape Server does this by using a disk array in front of the tape silo to cache incoming data from the mainframe. When there is enough data cached, it is moved on to an IBM Magnet cartridge, filling it completely.

The hardware controller maintains recent data on the

## VIRTUALLY TAPE

IBM's Virtual Tape Server handles this:

- Magnet 3590 tape drives
- RAID disk array
- Magnet tape libraries
- VTS controller, based on RS/6000 processor
- Adstar Distributed Storage Manager backup and storage management software port

disk array for a period of time to speed retrieval of requested files. Virtual tape technology acts like a more tightly integrated and quicker hierarchical storage management (HSM) system. HSM normally moves data among file servers, disk systems and tape silos.

The Virtual Tape Server, which is priced from \$315,000 to \$250,000, doesn't require changes to the mainframe or mainframe applications (see chart above).

Storage Technology Corp. is developing a similar product, due next year, called Virtual Storage Manager (VSM April 2). Officials at the Louisville, Colo., firm claimed their proprietary virtual tape technology will provide quicker response times than IBM's approach. □

# Repository enables object code reuse

By Sharon Gaudin

ORACLE CORP. is about to unveil an object repository that will let developers on one project team more easily reuse code written by other teams at the same company.

Federated Repositories, which is expected to go into full beta this summer, will serve as the interface to an unlimited number of repositories on any Unix or Windows NT platform, said Dennis Moore, Oracle's vice president of marketing.

The repository is expected to boost object reuse because developers will be able to access repositories within the same firm.

"There always have been other development teams in big companies, and they could be reusing each other's code. We're making it look to the programmer like it's all one repository," Moore said.

Moore said the repository has a Common Object Request Broker Architecture-based middleware layer, which connects to all the repositories and feeds the data to the user as if it is from one location. □

"Before it was a customer relationship. Now, it's an adversarial relationship." — Chuck Mulloy, Intel spokesman

*“You Won’t  
Believe  
What We’re  
Doing With  
COBOL.”*



M I C R O F O C U S

*Transforming The Enterprise*

# Diminished Comdex still has plenty to show

By Lisa Picarillo

THE DUTIFUL continue to flock to Atlanta — and, in alternate years, Chicago — but lately Comdex/Spring attendance has been dwindling in the wake of trade show overload.

And because PC Expo is held in New York just a scant two weeks after Comdex, it's no surprise that there are no earth-shaking announcements expected to come out of the show.

At the last minute, several vendors, including Infocore Corp., a subsidiary of Computer Associates International, Inc., canceled Comdex briefings and product demonstrations in favor of holding them at PC Expo.

## WHAT TO EXPECT

But the lack of product introductions and ensuing hype may give attendees a chance to examine some clearly visible trends. For example, show-goers can expect lots of talk about Windows NT, "push" technology, intranets, scalability, network computers and multimedia.

One industry watcher commented, "If you don't hear the word 'content' at least twice while at the show, then you're not hanging out with the right crowd."

If you want to hear the word "Domain" at least half a dozen times, then you should attend Lotus Development Corp. President Jeff Papows' opening keynote on Monday.

Also at the show is the Windows World Open Application Development Contest, sponsored by Computerworld, Microsoft Corp., Softbank Comdex and Wall Data, Inc. The awards will be presented in conjunction with Bill Gates' keynote address on Tuesday.

On Wednesday, outspoken Oracle Corp. CEO Lawrence Ellison and mercurial CNN founder Ted Turner (now vice chairman of Time Warner, Inc.) will deliver opinions on delivering new content via the Internet and media convergence. CNN and Oracle are scheduled to announce a partnership in which CNN will provide content and Oracle will provide technology.

## ON TO THE PRODUCTS

Campbell Services, Inc. in Southfield, Mich., will launch a special OnTime Web Edition, which will facilitate the creation of dynamic calendars.

Cardiff Software, Inc. in Carlsbad, Calif., is expected to

introduce Teleform Internet Solution, an automated data collection product for the Internet and intranets. The product streamlines the process of creating, distributing and collecting information from Hypertext Markup Language-based forms by using client and server components to transmit data directly to any Open Database Connectivity-compliant database, ASCII file or SPSS.

Netmarf, Inc. in Atlanta will take the wraps off SoftCast, an application for software developers, independent software providers and network managers who want to facilitate automatic

application updates, upgrades and repairs without end-user interaction.

AccountMate Software Corp. in Mill Valley, Calif., will show off Visual AccountMate/400, an integrated financial application for IBM's AS/400 platform. Visual AccountMate/400 offers AS/400 users the same features as its Windows 95 and Windows NT counterpart, coupled with unlimited scalability, enhanced security and the reliability of the AS/400.

Comdex attendees who hope to get some hands-on comparisons of handheld devices might want to head over to the Hand-

held PC shoot-out.

With the growth in digital video and multimedia, storage software and hardware vendors will show products to store large capacity files quickly.

For example, Syed Data Systems in Howell, N.J., will announce what it calls the fastest connector on the market for RAID storage.

Traveling Software, Inc. in Bothell, Wash., will show its new LapLink for Windows NT product. The software offers a new scheduler and remote file synchronization and allows remote users to access and transfer large files. LapLink is avail-

able this week and costs \$149.

Network Computing Devices, Inc. in Mountain View, Calif., plans to announce smart card connectivity for the Explora and HMX network computers.

Smart cards provide secure access to networks from remote network computers and for secure electronic-commerce transactions.

Network Computing Devices will exhibit a two-level user authentication application using CompuLink smart card readers. The capability to accommodate smart cards exists with the serial port on the company's network computers and through Win-Centris NT server software. □

Mitch Wagner, *Mindy Blodgett* and *April Jacobs* contributed to this report.

# Collaboration focus of updated WordPerfect Suite

By Lisa Picarillo

LATER THIS MONTH, Corel Corp. is slated to ship an updated version of its WordPerfect Suite that adds file-sharing and collaboration features throughout the core applications.

For example, the forthcoming suite has a version-control feature that makes it clear who makes what changes to a document.

Beta-tester Bob Beck, a legal consultant in Oklahoma City, called the new workgroup features "a big improvement that makes it much easier to share files across a network."

The new version, called Corel WordPerfect Suite 8, includes updated versions of the core applications: WordPerfect, Quattro Pro and Corel Presentations.

Version 8 also includes Corel

Banista, a Java publishing tool; PhotoHouse 1.1, an image editor and manipulation program; Desktop Applications Director, a task bar that launches the core applications; and Netcape Communications Corp.'s Navigator 3.0 browser.

Current users of the \$395 suite can upgrade to Version 8 for \$179.

The new version, which runs on Windows 95 and Windows NT, has a consistent set of menu items across the core applications. Also, each of the core applica-

tions can create Hypertext Markup Language files and access the World Wide Web directly from within the application.

One beta tester said he is pleased that this release emphasizes day-to-day work functions rather than fancy Internet features (see chart).

Pierre Caron, an engineer at Quebec's Ministry of Municipalities in Montreal, said he welcomes the enhancements to Quattro Pro. The suite's spreadsheet application. The ministry has more than 500 users of the Corel suite.

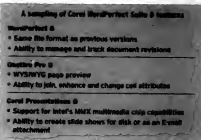
## SIMPLE BUT IMPORTANT

"They finally provided us with superscript and subscript (just formatting) and in-cell formatting," Caron said. "If you deal with something like chemistry and you can't write out something basic like H<sub>2</sub>O or other formulas, that's odd. These functions, and others, like the ability to drag and drop text in a cell, seem small, but they're very important for day-to-day work."

Ottawa-based Corel also plans to offer a package called CorelCentral that will provide calendar, scheduling, a to-do list, an address book, a contact log and a card file.

Through its integration with Netscape's forthcoming Communicator, CorelCentral will also offer users electronic mail, an Internet browser and discussion groups and conferencing.

But CorelCentral — designed to compete with Outlook, part of Microsoft Corp.'s best-selling Office 97 program — won't be available until later this summer. □



# Gartner warns users off some Compaq laptops

By Mindy Blodgett

THE INFAMOUS Gartner Group, Inc. last week released a "problem watch" report, warning users away from certain Compaq Computer Corp. notebooks. Compaq responded that the glitches have been fixed.

The Gartner report is a compilation of user complaints received in the first quarter of this year. The report claimed a high number of "dead on arrival" laptops and "infant mortality" — meaning notebook failures within 30 days.

Gartner, a consultancy in Stamford, Conn., warned users

not to buy the Armada 4100 series. It also told users to "buy with caution" the LTE 5000 series, which Compaq, the third-largest laptop vendor in the U.S., is slowly phasing out.

Compaq officials said they had repeated problems in the most recent shipments of the Armada 4100 series and had issued software patches for faulty laptops already shipped. Users can get information from www.compaq.com or by calling (800) 652-6672.

Leslie Fiering, a Gartner analyst and author of the report, said the laptop problems range from failures with the power

supply to bugs in the hard drive.

Ted Clark, vice president of marketing for portables at the Houston-based vendor's PC division, acknowledged the problems. But he disputed Gartner's assertion that users shouldn't buy Armada 4100s at all.

"We have corrected the problems," Clark said. "We are confident the product is of high quality now."

Fiering said the reported problems aren't limited to Compaq. "All the vendors are having quality problems, because they are rushing laptops out the door without adequately testing them," Fiering said. □



For the ideal line of business PCs — one that makes your life a lot easier — you need stability. You expect reliability. You demand enhanced manageability and lower cost of ownership. On top of that, the machines must be simple to set up, easy to upgrade and come in network-ready packages which include SMART drivers, DMI BIOS support and LANDesk™. Possible? Absolutely — with Micro™ ClientPro. Whether you choose the M16, M16-X, or X16, ClientPro combines the features you're looking for with award-winning performance and lower total cost of ownership.



ClientPro also gives you good reason to breathe easier because it's made by Micron — a company that gives you the assurance of 24-hour technical support. And our industry-leading, 5-year/3-year Micron Power™ limited warranty protects your investment. Stability, reliability and low total cost of ownership. You can have it all with ClientPro. Headaches not included. Call us or visit our Web site today.

512MB pipeline burst cache, fast BIOS,  
-DMA support  
3Com® 3C905 network adapter  
1.5" floppy drive  
Integrated 32 MB/64/128 graphics  
-acceleration (S3, VESA, VGA)

Integrated, washable sound  
Tool-free maintenance or desktop  
Microsoft® IntelliMouse, 104-key keyboard  
Microsoft Windows® SE  
Intel i486SX Client Manager  
2-year 2-year Maxx Power limited warranty

Intel i386 Pentium® processor  
70MB IDE RAM  
1.6GB SMART IDE hard drive  
15" Monitors (EGA, VGA, 13.3" display)

**\$1499**

Intel® MMX to Pentium® processor with MMX™ technology  
10MB EDO RAM  
1.6GB SMART IDE hard drive  
15" Miracolor™ 2560x 2000 (13.1" diagonal)

\$1 599

256KB internal L2 cache, Bash BIOS,  
 RAID support  
 120 EIDE (2-ATA) drive  
 3Com 3C905 network adapter  
 3.5" floppy drive

Look for: multitouch or flexible  
Microsoft Intellimouse 104-key keyboard  
Microsoft Windows NT® Workstation  
Intel LANdesk Client Manager  
Sun's Java Micro Power Edition support

21GB HDD: hard drive  
15" Macos 1500s, 2000s (15.7" display)

**\$2,269**  
per month

- 512KB internal L2 secondary cache
- DMA support
- IDE EIDE variable-speed CD-ROM drive
- 3Com PCI 10/100 ethernet NIC
- 3.5" floppy drive

Text-free navigation is desktop  
 Upgradeable, versatile audio with speakers  
 Microsoft IntellMouse, 104-key keyboard  
 Microsoft Windows NT Workstation  
 Intel i486 Class Manager  
 2-year Class Micro Power, Intel processor

2.1 GB 150MBT EIDE hard drive  
17" Micron 1770s, 200hp / 16.0" display

**\$2,649**  
See your dealer.

- 1-year limited warranty on microcomputers and their software
- 1-year limited parts-and-labor system warranty (1 year for hardware, 90 days for software)
- 1, 2, or 3-year system-to-system service agreement for hardware cleaning and repair options
- 24-hour toll-free emergency technical support for Micro-Station systems; 1 optional national operating system technical consultation available for Micro-Station systems
- 24-hour emergency help
- 24-hour technical support

The company's support staff and quality of service is standard. Technical assistance and user support are available by phone, fax, mail, or on-site. Users can also get the assistance they need by e-mail. Users can also get the assistance they need by e-mail. Users can also get the assistance they need by e-mail.



**CALL NOW FOR DETAILED PRICING AND OPTIONS**

MICRO

# Spam now plagues IS

CONTINUED FROM COVER

be the originator of junk E-mail. "Think about the amount of junk mail in the mail room, how often the fax machine is clogged with junk faxes and how often a busy worker has to find off a cold-calling stockbroker or salesperson," said David Kopans, president of Zero Junk Mail, a Charlottesville, Va., firm that offers a service to remove individuals from the lists of known spammers, telemarketers and postal mail solicitors.

## MORE SPAM

"The volume of spam is up, and we're not happy about it," said Michael McGhee, director of administrative computing at the University of Nevada, Las Vegas.

Universities are particularly vulnerable to spamming and spoofing, which occurs when a person uses someone else's mail identity for bad mailings.

A few months ago, McGhee said he was getting one or two complaints per week from end users about spam. Now he gets one or two per day.

In the past month, spam has caught the attention of state

and federal legislators.

Two weeks ago, two bills were introduced in Congress to try to stop spam (see chart). The legislation was inspired by concern that recipients must pay constant charges to receive it — a complaint some spammers reject.

But users and industry experts questioned whether anti-spam legislation is practical.

"I have doubts that a legislative solution would work," said David Soeken, assistant professor and director at the Center for Information Technology and Privacy Law at The John Marshall Law School in Chicago.

"Another approach is to ban commercial spam entirely, and that probably makes more sense."

Enforcement is the problem, according to Bob Stull, director of network operations at GlobalNet International, Inc., an Inter-

net service provider in Augusta, Ga.

If it becomes illegal to send spam in the U.S., he said, spammers will just relocate servers offshore.

But some spammers appear to be responding to antispam pressure.

A handful of the largest spammers last week said they would stop delivering spam on the network of Dearborn, Mich.-based Ape Global Internet Services, Inc., until the company could develop a working spam-filtering system.

## BETTER FIXES WANTED

Users are asking for technological remedies, such as better filters in mail clients and servers that detect spam and prevent spoofing.

Mark Schmidt, information systems director at Heritage Broadcasting Group in Tustin,

Mich., already uses capabilities embedded in his Microsoft Corp. Exchange server to combat spam.

"I can block anything from a certain address or automatically delete messages as they come in," he said.

Although E-mail software is becoming more adept at stopping spam, most observers agreed the software isn't good enough yet to keep out all spam.

Most mail clients and servers let users filter out E-mail from a known address, but spammers change addresses often to get around that.

"We really have not come up with good technical solutions yet," said Paul Hoffman, co-director of the Internet Mail Consortium, an industry group in Santa Cruz, Calif. "Even if we do erect technical boundaries, people will just figure out a way to get around them." □

# Ticked-off users head for court

By Kim Girard

As anger against spammers escalates, users are starting to drag offenders to court.

For example, Tracy LaQuey Parker and her husband, Patrick Parker, last week handed with their Internet service provider, the Texas Internet Service Providers Association, and EFF Austin, a Texas-based civil liberties organization, to sue alleged spammer Craig Nowak and his C.N. Enterprises.

The Parkers' lawsuit isn't the first. Early rulings have come down against cyber junk mailers. Spam purveyor Cyber Promotions, Inc., a Philadelphia-based bulk E-mail advertiser, lost a court battle with America Online, Inc. last year when a judge rejected an argument that E-mail is a form of speech protected by the First Amendment. In another case brought by Cyber Promotions filed by ComputerServe Corp., a judge ruled in

February that junk E-mail is a trespass of private property.

In this latest case, Tracy Parker will try to prove that C.N. Enterprises trespassed when Nowak swiped her domain name, flowers.com, and used it as a return address when sending thousands of messages offering to sell for \$69.95 information on cash grants.

## COMMON APPROACH

Analysts said that is a common strategy used by spammers who ask buyers to call them back or send checks in the mail.

Parker, who runs a floral and gardening information service, said her E-mail became paralyzed for two days, flooded with hate mail from those who used her return address to send nasty messages.

"We were up to 6,000 messages when we asked our provider to direct them somewhere else, because it was freezing us out of our account, they were

coming in so fast," she said.

John Quarterman, co-owner of Zikler Internet Park, Parker's Internet provider, said he joined the lawsuit to help set a precedent, stop the spammer and perhaps collect some money to compensate for the time he spent fixing the problem.

Parker said she filed the civil suit to help make people more responsible and accountable for their actions.

Her lawyer, Pete Kennedy at George Donaldson & Ford in Austin, said Nowak's alleged actions were "akin to dumping garbage on someone else's property."

Nowak, who couldn't be reached for comment, is being sued for nuisance and trespass.

"It seems to me a pretty clear case" of misappropriating identity, said Walter Effross, an associate professor of law at American University's Washington College of Law in Washington, D.C.

## Junk Rx

Like remedies for poison ivy, techniques to stop or deflect spam abound. As no less for advice, users and Internet service providers last week offered their best weapons for battling junk E-mail that arrives en masse, otherwise known as spam.

"People are finding ways of dealing with floods of E-mail they don't want," said Bob Stull, director of network operations at GlobalNet International. "We're turning to products, like mail servers, that prevent people from misusing our resources."

Art Malin, a systems administrator at Koolhaas Electric Cooperative in Haystack, Idaho, said spamming is slowly becoming more of a problem. For example, a recent offender attempted to shower his colleagues with pornography. Malin said he returns a lot of E-mail to senders, although many do not. He isn't sure that return addresses are valid. He said service providers should charge a fee for each mass E-mail sent. The amount could be deducted from the mailer's service provider account, he said.

John Quarterman, a co-owner of provider Zikler Internet Park in Austin, Texas, blocks known spammers who use fixed IP addresses at the router or from their external IP field. He also weeds out spammers with known return addresses.

But most spammers use fake return addresses because they want to avoid hate mail, Quarterman said. To trip up those offenders, he checks the domain name to determine if the address used can receive mail. If not, the message isn't delivered.

Walter Effross, an associate professor of law at American University's Washington College of Law, suggested that users adopt a separate Internet address for chatting with in online user groups. Spammers often troll those groups for potential names to add to their list.

"Bots" filters, which are used to filter out E-mail addresses that users can identify, can be useless because spammers change their addresses so often, Effross said. "[Spammers] can adopt new identities every minute," he said.

— Kim Girard and Barb Cole-Gould

# EarthLink targets spam scowflaws

AFTER BEATING back E-mail spammer Cyber Promotions, Inc., Internet service provider EarthLink Network, Inc. has turned its attention to eight other companies it said violated its antispamming policies.

EarthLink has sent "cease and desist" letters to Real Time Entertainment, S. Madeline Productions, Creative Finance Alternatives, Internet Communications, Inc., Sex Girls Publishing, LCGM, New York Internet Center and Prosperity Books, charging that they have violated the service provider's policies against distributing unsolicited commercial electronic mail and falsifying messages' origins.

Charles Betty, president and CEO of EarthLink, said the service provider will take immediate legal action against any company that violates its strict anti-spam policies.

— Stewart Duck

# THINK FAST OR GET LEFT BEHIND.

Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95\* per year - a savings of over 73% off the single copy price.

First Name \_\_\_\_\_ MI \_\_\_\_\_ Last Name \_\_\_\_\_  
Title \_\_\_\_\_ Company \_\_\_\_\_ E-mail address \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Address Branch ☐ Home ☐ Business ☐ New ☐ Return ☐ Single copy price \$3.95/issue  
U.S. Only. Canada \$35, Mexico, Central/South America \$30, Europe \$25, all other countries \$25. Foreign orders must be prepaid in U.S. dollars.

Please complete the questions below.

1. **BUSINESS/INDUSTRY** (Circle one)
  - ☐ 1. Manufacturer (other than computer)
  - ☐ 2. Research/Engineering/Real Estate
  - ☐ 3. Health/Healthcare
  - ☐ 4. Wholesale/Retail Trade
  - ☐ 5. Business Services (except IPR)
  - ☐ 6. Government - State/Local/Federal
  - ☐ 7. Communication - Internet/Other
  - ☐ 8. Transportation
  - ☐ 9. Financial/Consumer/Professional/Service
  - ☐ 10. Education/Other
  - ☐ 11. Systems Integrator, Vendor, Computer Services
  - ☐ 12. Business Software Planning & Consulting
  - ☐ 13. Computer Peripheral Distributor/Reseller
  - ☐ 14. Other \_\_\_\_\_ (Please Specify)
2. **TITLE/FUNCTION** (Circle one)
  - ☐ 15. Chief Information Officer/Vice President
  - ☐ 16. Director of Information Management
  - ☐ 17. Director of MIS Services, Information Center
  - ☐ 18. Director of Systems, Data Processing, Systems
  - ☐ 19. Director of IT, IT Manager, Public, Inc.
  - ☐ 20. Director of IT, Director of IT, Director of IT
  - ☐ 21. Programmer, Programmer, Systems Administrator
  - ☐ 22. Systems Administrator, MIS, Tech. Mgr.
  - ☐ 23. Systems Administrator/Consulting/IT
  - ☐ 24. Computer IT Management
  - ☐ 25. President, Owner/Partner, General Mgr.
  - ☐ 26. Vice President, Asst. VP
  - ☐ 27. Treasurer, Controller, Financial Officer
3. **EMPLOYMENTAL MANAGEMENT**
  - ☐ 28. Sales & Mktg. Management
  - ☐ 29. Product, Legal, Accounting, Mfg.
  - ☐ 30. Information Center/Services, Education, Research, Training
  - ☐ 31. Other Total Personnel

Do you use, operate, specify, recommend, purchase (Circle all that apply):

Operating Systems: ☐ 32. DOS ☐ 33. Windows NT ☐ 34. Windows 95 ☐ 35. Windows 3.11 ☐ 36. Unix ☐ 37. Mac OS ☐ 38. Other \_\_\_\_\_

App. Development/Products: ☐ 39. C++ ☐ 40. Java ☐ 41. Visual Basic ☐ 42. Fortran ☐ 43. Cobol ☐ 44. Pascal ☐ 45. Other \_\_\_\_\_

**COMPUTERWORLD**

8277 &

NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

**BUSINESS REPLY MAIL**

FIRST-CLASS MAIL PERMIT NO. 558 MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

**COMPUTERWORLD**

P O BOX 2044  
MARION OHIO 43306-2144



# Unlocking data vaults

CONTINUED FROM COVER 1

ed customers is something they can't afford to pass up. The conference was sponsored by the Data Warehousing Institute.

"Customers tell us they're looking to do more business with companies that can readily share information with them," said Don Stoller, manager of decision services at Owens & Minor, Inc. in Glen Allen, Va. "They almost consider it some of their own data, and they want to get their hands on it."

Owens & Minor, a \$3 billion distributor of medical and surgical supplies, recently began to extract purchase history files from its data warehouse and send them to a handful of key customers who want to analyze their spending. Next year, the company wants to give customers access to their data via the Web, Stoller said.

A network of hospitals could use the information to reduce supply costs by standardizing purchases across the group, Stoller said. But Owens & Minor officials said they hope that sharing the

reduce expenses by letting customers use the Web to access Blue Cross/Blue Shield's data warehouse, provided it can "ensure that people can only get into their own part of the galaxy."

Interest in extranet-enabled warehouse-

ing extends beyond the cost-obsessed health care market. For example, source said Federal Express Corp. in Memphis is experimenting with the concept.

CompuCom Systems, Inc., a Dallas-based computer distributor, this month plans to start using the Web to feed warehouse data to individual customers.

The data will be stored on a Web server, and access will be controlled by passwords and restrictions on incoming in-

ternet addresses, said Darrell Plant, information services director for advanced technologies at CompuCom.

Securing sensitive data from prying eyes is the biggest roadblock for Web-based warehousing, said Wayne Ecker-son, an analyst at Patricia Seybold Group in Boston. "You don't want customers to see what other people are paying for products, or else they'll want to get better deals, too," he said. □

## UNLOCKING YOUR DATA WAREHOUSE

data will prompt customers to buy more of their supplies from the company.

Blue Cross/Blue Shield of Tennessee this spring rushed to build a small prototype data mart for a corporate customer whose health insurance contract was up for renewal.

"The primary focus is in us retaining them as a customer wasn't cost, but the quality of information we could provide them," said Frank Brooks, manager of data resource management at the Chattanooga-based insurer.

The company did the same thing for a Chattanooga hospital that wanted to analyze patient care trends among its doctors. In both cases, Blue Cross/Blue Shield trained the external users on its query tools and is refreshing and supporting the data marts for customers, Brooks said.

Now other hospitals want in, "but we can only do it for so many" because of the cost, Brooks said. He said he hopes to



# TREND MICRO?

- #1 In Total Protection: Trend Blocks More Access Points Than McAfee
- #1 In Performance: Trend Products Are Faster Than McAfee's
- #1 In Usability: Trend Products Are Simpler To Install And Manage Than McAfee's
- #1 In Technology: Trend Builds, McAfee Buys Its Core Technology
- #1 In Time to Market: Trend Leads, McAfee Follows
- #1 In Detection: Trend Outperforms McAfee In Independent Reviews
- #1 In Windows NT Protection: Trend Has NT Products At Every Level, McAfee Is Missing Key NT Developments
- #1 In Customer Priorities: Trend Specializes In Anti-Virus, McAfee Diversifies
- #1 In Server Solutions: Trend Focuses On The Server, McAfee Is Still Tied To The Desktop
- #1 In Value For Money: Trend Sells, McAfee Leases
- #1 In Strategic Partnerships: Trend Products Are Recommended By Internet, Mail And Server Leaders, McAfee's Aren't

www.trendmicro.com/365

**TREND**  
MICRO CORPORATION

Complete Your Protection for the Enterprise



# Unlocking data vaults

CONTINUED FROM COVER 1

ed customers is something they can't afford to pass up. The conference was sponsored by the Data Warehousing Institute.

"Customers tell us they're looking to do more business with companies that can readily share information with them," said Don Stoller, manager of decision services at Owens & Minor, Inc. in Glen Allen, Va. "They almost consider it some of their own data, and they want to get their heads on it."

Owens & Minor, a \$3 billion distributor of medical and surgical supplies, recently began to extract purchase history files from its data warehouse and send them to a handful of key customers who want to analyze their spending. Next year, the company wants to give customers access to their data via the Web, Stoller said.

A network of hospitals could use the information to reduce supply costs by standardizing purchases across the group, Stoller said. But Owens & Minor officials said they hope that sharing the

reduce expenses by letting customers use the Web to access Blue Cross/Blue Shield's data warehouse, provided it can "ensure that people can only get into their own part of the galaxy."

Interest in extranet-enabled ware-

ing extends beyond the cost-obsessed health care market. For example, sources said Federal Express Corp. in Memphis is experimenting with the concept.

CompuCom Systems, Inc., a Dallas-based computer distributor, this month plans to start using the Web to feed warehouse data to individual customers.

The data will be stored on a Web server, and access will be controlled by passwords and restrictions on incoming In-

ternet addresses, said Darell Platt, information services director for advanced technologies at CompuCom.

Securing sensitive data from prying eyes is the biggest roadblock for Web-based warehousing, said Wayne Eckerson, an analyst at Patricia Seybold Group in Boston. "You don't want customers to see what other people are paying for products, or else they'll want to get better deals, too," he said. □

## UNLOCKING YOUR DATA WAREHOUSE

There are potential benefits...

- Tightens relationships with customers
- Helps keep them from switching to other suppliers
- Reduces the need for paper-based reports

...but there also are hurdles

- Need to ensure outsiders see only their own data
- Unclear whether customers will help foot the bill
- Lack of Web-based tools with full query capabilities

data will prompt customers to buy more of their supplies from the company.

Blue Cross/Blue Shield of Tennessee this spring rushed to build a small prototype data mart for a corporate customer whose health insurance contract was up for renewal.

"The primary focus is on retaining them as a customer wasn't cut, but the quality of information we could provide them," said Frank Brooks, manager of data resource management at the Chattanooga-based insurer.

The company did the same thing for a Chattanooga hospital that is used to analyze patient case trends among its doctors. In both cases, Blue Cross/Blue Shield trained the external users on its query tools and is refreshing and supporting the data marts for customers, Brooks said.

Now other hospitals want in, "but we can only do it for so many" because of the cost, Brooks said. He said he hopes to

# TREND MICRO?

## Trend Micro Is Now #1 In Enterprise-Wide Virus Protection

- #1 In Total Protection: Trend Blocks More Access Points Than McAfee
- #1 In Performance: Trend Products Are Faster Than McAfee's
- #1 In Usability: Trend Products Are Simpler To Install And Manage Than McAfee's
- #1 In Technology: Trend Builds, McAfee Buys Its Core Technology
- #1 In Time to Market: Trend Leads, McAfee Follows
- #1 In Detection: Trend Outperforms McAfee In Independent Reviews
- #1 In Windows NT Protection: Trend Has NT Products At Every Level, McAfee Is Missing Key NT Developments
- #1 In Customer Priorities: Trend Specializes In Anti-Virus, McAfee Diversifies
- #1 In Server Solutions: Trend Focuses On The Server, McAfee Is Still Tied To The Desktop
- #1 In Value For Money: Trend Sells, McAfee Leases
- #1 In Strategic Partnerships: Trend Products Are Recommended By Internet, Mail And Server Leaders, McAfee's Aren't

[www.antivirus.com/1025](http://www.antivirus.com/1025)

**TREND**  
MICRO

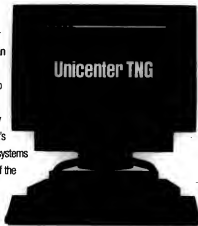
Complete Virus Protection for the Enterprise

# Your choice.

This simple chart only begins to explain the enormous difference between Unicenter® and IBM/Tivoli TME 10.

What clients want today are complete solutions not just software initiatives like SAA, OfficeVision and SystemView. The questions are, do you want to bet your career on IBM's view of the future? Can you afford to wait? And how can you have confidence in a solution that is so IBM-centric and biased?

Those are just a few reasons why thousands of clients prefer Unicenter. It's the industry standard for network and systems management. Today, more than 93% of the Fortune 500 and thousands of small to medium-size businesses trust CA for enterprise management.



Unlike TME 10, Unicenter TNG supports every major hardware platform and operating system. It's open, scalable, extensible and vendor-neutral. And with Unicenter TNG's powerful new

features like advanced agent technology and Real World Interface™, Unicenter TNG is light-years ahead of TME 10.

**SHIPPING  
TODAY**

It's real, it's mission-critical and it's up and running in thousands of sites around the world.

If that sounds good to you, remember, it's your choice.

**Call 1-888-864-2368  
[www.ca.com](http://www.ca.com)**

**COMPUTER  
ASSOCIATES**  
Software superior by design.

## Unicenter® TNG™

©1997 Computer Associates International Inc., Armonk, NY 11769-1000. All other product names referenced herein are trademarks of their respective companies. Information based on publicly available information as of 3/1/97.

# Unicenter IBM/Tivoli TME 10

## IBM Tivoli Enterprise Manager

Intelligent, Anonymous and Lightweight Agents ✓

Built-In Security ✓

Single Sign-On ✓

Robust Security Including the Internet and Intranets ✓

Monitoring and Event Management ✓ ✓

Compliance with SABMP and HMMP/HMMS Standards ✓

Real Time Collection ✓

Robust File-Based Storage Management ✓

Robust Delivery ✓ ✓

Robust Service Desk ✓

Robust Management ✓

Robust Process Visualization ✓

Robust Configuration Management ✓

Robust Reporting ✓

Robust Administration ✓

Robust Integration ✓

Robust Scalability ✓

Robust Reliability ✓

► Telecom reform, international commerce prompt products

on the impact of telecommunications reform, new networking technologies and international commerce.

For the first time in the telecommuni-

Cabletron in Rochester, N.H., will announce modules that will enable infor-

The modules for the low-end SmartSwitch 2200 and larger SmartSwitch 6000 let users connect the switches to wide-area network links without intermediary equipment. The modules will ship next month.

Cabletron will also announce that it has integrated an application that helps carriers monitor devices linked to high-speed Synchronous Optical Network lines with its popular Spectrum enterprise network management system. The application is called Spectrum TMN Q-Adaptor.

**PERFORMANCE**  
**EVERYTHING**  
*for data warehouse success*

**RED BRICK® WAREHOUSE 5.0 IS THE WORLD'S**  
***fastest* and most scalable relational database**  
for data warehousing, including data marts, OLAP and data mining.

The "Universal, generic,  
flexible" database  
is the only RDBMS  
designed specifically for data warehousing.

Register now for the

# "Performance is Everything"

seminar in your area.

[www.redbrick.com](http://www.redbrick.com)

customers and government agencies.  
Products and service enable more than  
more data and work better.

With Red Brick, you get a data warehouse

To learn more, attend the "Performance is

the cost, deployed in one-third the time. **Everything**® seminar in your area. Register now: 1 800 939 1845 or [www.redbrick.com](http://www.redbrick.com)



**RED BRICK<sup>®</sup>**  
The Data Warehouse Company<sup>™</sup>

Red Brick Systems, Inc. 485 Alberto Way, Los Gatos, CA 95032 USA [www.redbrick.com](http://www.redbrick.com)  
© 1997 Red Brick Systems, Inc. All rights reserved. All trademarks and registered trademarks are property of their respective holders.

Cisco in San Jose, Calif., will unveil a package code-named "POP-on-a-pallet," which comprises everything carriers need to provide bundled services to user firms.

The package includes routing equipment, devices that support dial-up remote access and switches that support traditional network services. Providing multiple services from one scalable platform will make life easier for service providers, analysts said.

A Cisco spokesman confirmed the information but wouldn't provide additional details, except to say that POP-on-a-pallet will ship in 90 days.

Madge Networks, Inc. in San Jose is the latest vendor to broaden its Integrated Services Digital Network (ISDN) offerings, announcing products for carriers that are adding or expanding ISDN services. The so-called intelligent edge switching nodes can be used to add ISDN handling capabilities to central-office equipment so the provider can avoid buying new equipment or reprogram existing switches.

Providers that use the nodes can also avoid having to use expensive T1 lines to backhaul traffic to a central office that handles ISDN traffic. While many urban central offices are equipped with switches to handle ISDN traffic, analysts said Mudge's approach will benefit carriers that operate in rural areas and lack the equipment.

Madge's switching nodes include the ESN 1000, which costs \$17,995 and supports 40 ISDN lines, and the ESN 2000, which supports 136 basic ISDN lines and costs \$20,005. □

## Q: Where can you find the world's fastest CD-ROM Networking System?

A: [www.procom.com/53X](http://www.procom.com/53X)

Procom Technology, the leading name in CD-ROM networking solutions, is proud to introduce the fastest way to distribute gigabytes of CD-ROM based applications and data to networked users.

- Fast 53X performance
- 10ms access time
- Choice of 6-to 63-drive configurations
- Compatible with NetWare, NT, UNIX & OS/2
- Hot-swap drives, redundant power supplies & fans

Hyper CD is the newest in CD-ROM technology, accelerating CD-ROM access



through fast-burst reads to provide a data transfer rate of 7.9MB/sec and an average seek time of 10ms, more than four times faster than the fastest drives available today. So you get all the features of CD-ROM technology a durable, portable, interchangeable, low-cost medium at hard drive speed.

Join the growing number of government agencies, financial institutions, law firms and Fortune 500 companies who are already enjoying the benefits of networking CD-ROMs on Procom Technology's CD servers and arrays. Call us today at 800-800-8600 x414 or visit our website at [www.procom.com](http://www.procom.com).



### PROCOM TECHNOLOGY INC.

2181 Dupont Drive Irvine, California 92612

Tel: 800.800.8600 • Tel: 714.852.1000 • Fax: 714.261.7380

<http://www.procom.com> • E Mail: [info@procom.com](mailto:info@procom.com)

YOU'LL BE *surprised*  
BY SOME OF THE THINGS  
WE'VE DONE TO MAKE  
OUR PRODUCTS GO FASTER.

*(So will your CFO.)*



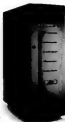
**Compaq Deskpro 6000 Family**  
Prices reduced up to 23%\*  
Now starting at \$1,589\*



**Compaq Professional Workstation 5000**  
Prices reduced up to 34%\* Now starting at \$1,500\*.  
Plus, buy the 3-D Model of the Professional Workstation and receive \$300 toward a V30, V70, or QVroom 230 monitor (thru 6/30/97)\*



**Compaq Deskpro 2000 Family**  
Prices reduced up to 18%\*  
Now starting at \$1,095\*



**Compaq ProLiant 5000**  
Free SMART2 Array Controller with the purchase of ProLiant 5000 6/166 and 6/200/512 models (thru 7/31/97)\*

*Exceptional VALUE.*

AND *extra SAVINGS ON*

COMPAQ PRODUCTS,

FOR A LIMITED TIME.



**Compaq ProLiant 2500**  
Buy a ProLiant 2500 and get \$300 off a 4.3GB or 9.1GB hard drive (thru 7/31/97)\*



**Compaq Deskpro 4000 Family**  
Prices reduced up to 23%\*  
Now starting at \$1,369\*



**Compaq Netelligent Networking Products**  
Selected switches reduced up to 22%\*



**Compaq Monitors**  
Entire line of award-winning monitors.  
Prices reduced up to 12%\*



**Compaq LTE 5000 Family**  
Prices reduced up to 13%\* on LTE 5300, LTE 5380, and LTE 5400.



**Compaq Armada 1100 Family and Armada 4100 Family**  
Prices reduced up to 30%\* on Armada 1100 family. Plus Free PC Card Modem with the purchase of any Armada 1100 model (thru 6/30/97)\*. Prices reduced up to 35%\* on Armada 4100 family. Buy an Armada 4100 and receive a Mobile CD Unit for 50% off (thru 6/30/97)\*



**Compaq PC Companion**  
Reduced up to 29%\*  
Starting at only \$199\*

To find your local reseller call 1-800-853-9526, or visit us at [www.compaq.com](http://www.compaq.com)

**COMPAQ**

\*All prices and price reductions shown refer to U.S. estimated reseller prices. Actual reseller prices may vary. These offers with purchase of qualifying product from a participating reseller thru 6/30/97 is specified and date, while supplies last. Workstation offers include monitor and base. \$199.99 and \$199.99. Offers are valid on Compaq rebranded products. All offers are subject to product availability, and are valid only in the U.S. Compaq reserves the right to change, alter or cancel these programs at any time without notice. © 1997 Compaq Computer Corporation. All rights reserved. Compaq, registered U.S. Patent and Trademark Office. Virtual, Desktop, LTE, Netelligent, Professional Workstation, and ProLiant are trademarks of Compaq Computer Corporation. The hard-hat logo and Business are registered trademarks of Intel Corporation. Other products mentioned herein may be trademarks or registered trademarks of their respective companies.



# Microsoft quiet on Rhapsodizing Office

► Office 97 for Macintosh to coincide with Mac OS 8 release

By Lisa Picard

APPLE COMPUTER, INC. has staked its future on Rhapsody, its next-generation operating system. But so far, Microsoft

Corp. isn't jumping on board to develop a Rhapsodized version of its best-selling Office suite.

Macintosh users may have to stick with the Mac OS version of Office, even

when Rhapsody is released next year.

Office's cross-platform nature has been a critical factor in allowing pockets of Macintoshers to coexist with Windows PCs in corporate offices.

It has helped TRW Systems Integration Group stave off conversion to the

Wintel platform, said Mike Anderson, director of computer systems at the Sunnyvale, Calif., firm.

Apple's decision to continue to upgrade its Mac OS — along with offering support for Macintosh software within Rhapsody — has some large Macintosh developers wondering why they should bother to develop for Rhapsody.

Microsoft, which six months ago increased its Macintosh staff to 100 workers, is one of the key developers still undecided about writing applications for Rhapsody, which is due next summer.

## UPGRADE UNDER WAY

In the meantime, Microsoft is running full steam ahead with its long-anticipated Mac OS upgrade of Office. Office 97 for the Macintosh will be on par with its Windows counterpart, which was released in January.

Next month's delivery of Office 97 for the Macintosh should coincide with Apple's schedule to ship Mac OS 8, code-named Tempo.

"We haven't announced plans for a Rhapsody version," said Ben Waldman, general manager of the Macintosh business unit at Microsoft. He cited a lack of in-depth information.

tion about Apple's forthcoming operating system as the primary reason.

"It's too early to say anything that is ironclad. And we need to gauge customer interest [in Rhapsody]," Waldman said. Users said having a version

of Office for Rhapsody would be nice, but it isn't mandatory.

A computer systems analyst at a major biotechnology firm that has more than 3,500 Macintoshes and 1,500 Windows desktops said his company wouldn't be affected if a Rhapsody-specific version of Office didn't materialize. Rhapsody includes technology for supporting Mac OS-based applications, the user said.

But he said Office on Rhapsody could offer improved stability. "Office [on both Windows and Macintosh] is the No. 1 source of all our problems. If there was a properly version, it might help make our environment more stable. And when Office crashed, it wouldn't take down the operating system," the user said. □



## ENCORE DATASHARE™ THE ENTERPRISE BACKUP SOLUTION.

You know how valuable your corporate information is. Are you protecting all of it?

In the past, your biggest worry was backing up the mainframe. But now, your corporate information is on a multitude of platforms. It's on mainframes, it's on open systems, it's on network servers, it's even on desktops. And you're faced with the challenge of protecting it. All of it.

You're not worried about your mainframe data, it's always secure, protected by proven, reliable backup utilities and disciplines. But your open systems and network servers don't share the same security. What if they could?

With Encore's Infinity SP™ Universal Storage Processor and DataShare™, they can. The Infinity SP provides

centralized storage for your information. And DataShare facilitates mainframe-based backups of all of your data — mainframe, open systems, and network servers. All of your corporate information can now be safeguarded against disaster using established, robust mainframe tools and procedures — tools and procedures you've always relied on. All of your information. The information you can't afford to lose.

Protect all of your corporate data.

Call Encore at 1-800-933-6267.



**Data**  
Data On Demand

**Win a Cool Prize  
Every Week!**

Enter the TechnoToys  
Sweepstakes in  
Computerworld  
Marketplace

(Excluding U.S. Canada)

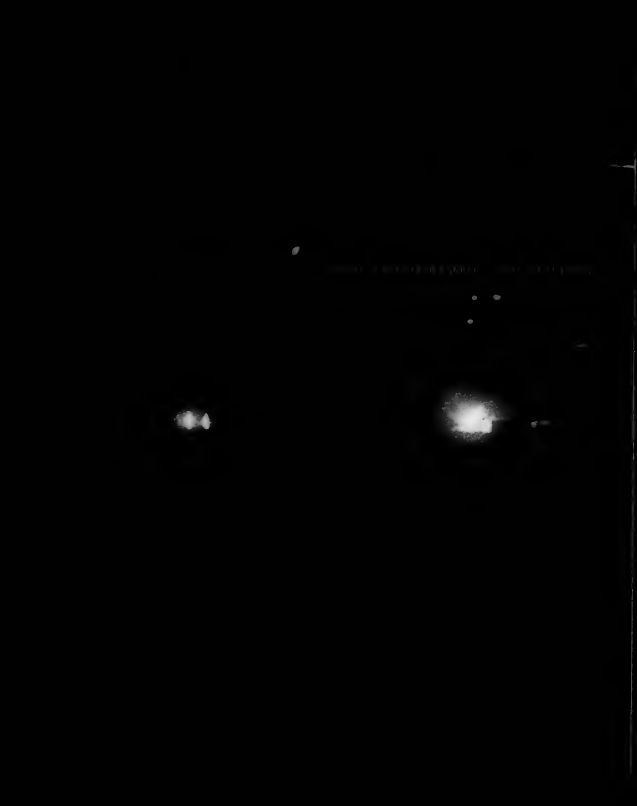
It was supposed to  
be the launch of a  
development *project...*

Not the project *itself.*

Should've used **UNIFACE**

COMPUWARE

— W.C. Computer Corp.  
1 800 361-3100  
www.infocorp.com



THAT 60 SECONDS IS ALL YOU NEED TO KNOW ABOUT US.

Every second counts. And every second of every day, Tandem® systems are trusted to handle 90% of the world's stock transactions, 80% of all ATM transactions, 66% of all credit card validations, and two-thirds of all 911 calls in the United States. Tandem now brings this reputation in business-critical online transaction processing to a wider range of open, scalable platforms: from our high-performance S-series NonStop® Himalaya® and UNIX® system-based servers to Windows NT® Server-based solutions. Because whether you're trading oil or filling orders, every second counts. Contact us at [www.tandem.com](http://www.tandem.com) for more information. Or to receive our latest information pack, which includes the new Windows NT Enterprise Management Sampler CD, call 1-800-NONSTOP, extension 8000. Every second, every transaction, every customer counts.



# Industry pioneer speaks his mind

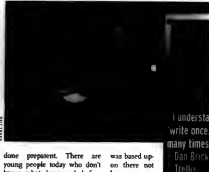
Computerworld senior writer Stewart Deck recently sat down with Dan Bricklin after the Institute of Electrical and Electronics Engineers Computer Society presented him its *Computer Entrepreneur Award* for "achievements that fundamentally changed the industry." In 1979, Bricklin conceived Visicalc, the software spreadsheet that helped sell the first PCs and Apple IIs. He is currently the chief technology officer at Trellico Corp. in Newton, Mass.

**CW:** How has the perception of software development changed in the past 25 years?

**DB:** When I was first involved, [the attitude was] "You're in software, what's so special about that?" People I knew in software would take jobs in the space program just so they could say, "I'm in the space program doing software," so that people could understand what they were doing.

**CW:** What are the problems with intellectual property copyrights in software?

**DB:** [In high-tech] intellectual property has always been a case that's not clear cut. Up to 1981, there was no patent history — all the basic research was



I understand Java is 'write once, test many times.' — Dan Bricklin, Trellico

done previously. There are young people today who don't know what happened before 1981 saying, "Oh, this is great. I've invented the world; I'll patent it." It's as if we came in to aviation in the '40s and started claiming patents that the Wright brothers invented. Total chaos.

**CW:** What could be the result of this?

**DB:** It's a real shame that you either have to start from scratch in an area and compulsively do your patents or not have them at all. Unfortunately, our industry started in the middle. The entire way we've taught computing, the entire way we built our tools,

was based upon there not being patents.

That's what's causing this great anomaly. In other businesses, people are taught to keep a dated engineering notebook. In the software business, everything was built on it not being that way. You can't even run the old computers to run the original stuff to prove that you did what you said you did back then.

We're starting to see the effects of this now. A lot of us aren't building things the best way we can because we're watching out for patents. We'll sort a lot of this stuff out over

time. What may happen is what happened in other industries — there were decades of chaos and nonadvancement. It could happen to us. The patent attorneys I talk to, who make their money on intellectual property rights, think it's awful.

**CW:** Can small companies still make a difference in today's multibillion-dollar industry?

**DB:** Sure, look at Netscape. There are always all sorts of little companies that are having immense impacts. That's one of the problems

developed the first Internet phones — the whole telecommunications infrastructure has been shaken up by the thought that this is possible.

**CW:** What do you think of Java?

**DB:** I don't like how some people describe Java as if it's already happened when they're talking about possibilities for the future. How if you write it once, it will run everywhere. That's not true. It is often the case that if you write it once, it

will run in many places. In today's world, I understand Java is "write once, test many times."

It could be all the things people say it is, but it can't necessarily be all of them together. On the flip side, the goals of Java are laudable.

**CW:** Is knocking off Microsoft a laudable goal?

**DB:** No. There's always going to be a No. 1 company. Today it's Microsoft. There can be a lot more people in charge of where things are going than Bill Gates. If you had to choose between various captains of industry over the last 50 years, Bill is not the worst person. In fact, he's up there pretty high if you see how he's advanced things.

**CW:** What do you think of Bill's recent chess triumph?

**DB:** It wasn't [Deep Blue] that won, it was the team behind the Blue. If you had an individual who was an amazing calculator and [could] boost their abilities using a computer, we don't consider that so amazing or demeaning to people.

If athletes use better poles to vault or better shoes, it doesn't demean [their] success. They're simply using their tools. □

## Clinton to push hands-off 'net policy

► Opposes taxation of Internet sales, favors industry self-regulation

By Matt Hambrick

PRESIDENT CLINTON is hammering out the final details of a policy that calls for government to take a hands-off approach to global electronic commerce.

The new policy, to be announced within two weeks, was designed to encourage the growth of Internet transactions.

"Electronic commerce will be our biggest form of commerce in a decade if we do this right," said Ira Magaziner, senior adviser to the president for policy development, in an interview last week.

The sweeping policy statement urges tax-eager governments to adopt a "hands-off the Internet" policy, observers said.

In turn, it calls on private industry to drive in to ensure privacy for Internet users and pro-

vide ways to protect children from offensive content.

"I'm in agreement with Clinton. I think we need to leave the Internet alone," said Pat Flynn, vice president of systems development at Fruit of the Loom, Inc. in Bowling Green, Ky., which has built 50 World Wide Web sites for its clothing distributors.

"In a worldwide environment, how would a company even know what all the taxing countries are?" Flynn said. "That would stifle the Internet down. It wouldn't be worth the effort."

Fruit of the Loom has generated \$1.5 million from business-to-business sales over the Web so far, and Flynn said he worries about the "mind-boggling" details his company would have to track if countries or states in the U.S. started to levy more taxes.

Webmasters and Internet users generally praised the open-market approach.

But many software makers

oppose the administration's stance of placing some limits on foreign trade in encryption software. The president wants to ensure that law-enforcement agencies can intercept terrorist and criminal acts on the Web by using a key-recovery system with a judge's consent, aides said.

### FOREIGN OPPOSITION

But some foreign and state governments are likely to object to the president's opposition to Internet taxation and his calls for restraint in writing new laws protecting Web consumers.

The call for industry to protect consumer privacy squarely hits Web designers who solicit personal data from online customers for marketing purposes. "We do need to be respectful of how we use the information" gathered from sites, said Judy Neuman, vice president of Internet media at Eddie Bauer, Inc. in Redmond, Wash.

"There's great customer in-

formation to be had from sites, and we want to respect the wishes of customers," Neuman said. "I would hope that most [webmasters] would look out for consumers and can self-regulate, but who leads that movement is up in the air."

Observers said Clinton will face his stiffest challenge over privacy from the European Union, where a directive prohibits the transfer of personal data to companies that do not extend adequate privacy protection to EU citizens. Clinton favors private-sector efforts.

Although Clinton is calling for limits on Internet regulation, it will take a series of global treaties and agreements with states and industry to make it happen, observers said. The year 2000 is the goal for getting the framework in place. In just a year, Clinton hopes to sway other countries and win U.S. Senate ratification of a treaty making the Internet a "tariff-free zone," federal officials said.

"There are some aspects of

the Web in which government has a valid role," said Sheldon Laube, chief technology officer at U.S. Web Corp. in Santa Clara, Calif. "Information systems need assurance they won't get used by foreign laws. ... There is no way to keep foreign residents out of your Web site," he said.

Randall Witting, president of CommerceNet in Palo Alto,

The first draft of 'A Framework for Global Electronic Commerce' can be found at [www.ietf.net/gov/electronic\\_commerce.htm](http://www.ietf.net/gov/electronic_commerce.htm)

Calif., a nonprofit trade association with 500 members worldwide, said: "The white paper lays down the gauntlet that says, 'Industry, it is your responsibility in areas of privacy, security and content management. If you can self-police yourself and work together, you will have relative freedom from government regulation. But if you cannot self-regulate, then government will need to take control.'" □

## Separated at birth?



Sun and SAS Institute. Related? We might as well be. For the 7th year in a row, Sun is the open systems platform of choice for SAS® software users. Together, we deliver proven applications and the most current and innovative technology this side of anywhere. A combo that results in real business solutions, like the SAS Scalable Performance Data Server™. It allows customers to take full advantage of scalable SMP architecture in their data warehouse, and it's only available on Sun. SAS Institute and Sun also jointly staff Customer Technology Centers to give SAS software the full potential of Sun® systems. So you have the ultimate products and solutions for your diverse business environment. Which is, after all, what this alliance is all about. To find out more, contact us at [www.sun.com/sepcw](http://www.sun.com/sepcw) or [www.sas.com](http://www.sas.com). **THE NETWORK IS THE COMPUTER™**

**SAS**  
SAS Institute Inc.



©1997 Sun Microsystems, Inc. All rights reserved. Sun, Sun Microsystems, the Sun logo and The Network Is The Computer are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries. SAS and Scalable Performance Data Server are trademarks or registered trademarks of SAS Institute Inc. "Separated at birth" is a registered trademark of SMP Magazine.

# Computer Industry

## Rivals nip at EMC's heels

By Tim Ouellette

SEVERAL RIVALS are boosting the performance of their disk arrays to challenge EMC Corp. in the \$2.3 billion open systems storage market.

Last week, Sun Microsystems, Inc. agreed to acquire crucial data sharing technology that will help its systems store both mainframe and open systems data from distributed Unix and PC-based servers.

Data General Corp. in Westborough, Mass., plans a June 1 announcement outlining its new Clarion disk arrays' use of fibre channel technology, a high-speed data interface.

And upstart MTI Technology Corp. plans to give its Gladius series of RAID disk arrays the capability to act as solid-state

disks, akin to internal high-speed system memory, for use with mission-critical database applications.

"Before, a lot of enterprise storage vendors like Data General Corp., MTI and Sun weren't even in the ballpark [with EMC]," said Sean Derrington, an analyst at Meta Group, Inc. in Stamford, Conn. "Now, everyone is reaching performance parity."

EMC, in Hopkinton, Mass., has led the market with high-performance systems. Other leaders include IBM and Hewlett-Packard Co.

Sun is getting there by buying the storage business and technology of Encore Computer Corp. in Fort Lauderdale, Fla., for \$185 million. Encore's Infini SP arrays let users store

### UNIX EXTERNAL DISK ARRAYS MARKET

EMC dominates the open systems storage market, but smaller players are catching up

Vendor	1996 revenue	Growth rate (1995 to 1996)
EMC	\$688M	245%
Sun	\$467M	26%
Data General	\$133M	45%
MTI	\$93M	166%

Source: International Data Corp., Princeton, Mass.

mainframe and open systems data in the same box and has been one of the few real competitors to EMC's Extended Storage Platform technology.

Sun's move bolsters the Mountain View, Calif., firm's plans to become a major storage provider to users running more than just Sun servers (CW, May 12). Sources said the transaction could take a while, though.

In the meantime, MTI, in Anaheim, Calif., is going head-to-head with EMC in contract compression. MTI is picking its battles by focusing on niche applications where users need high-

speed database storage.

"Our people seek out users running major databases," said Richard Reckon, MTI's vice president of business development.

Besides speeding up Gladius 3400 with the solid-state disk feature this summer, MTI has doubled the speed of the array via a new UltraSAS interface-based controller.

And the firm is taking a page out of EMC's service book by offering a Phone Home service, which automatically notifies MTI service staff if a failure occurs in a customer's disk array.

## Novell loss triggers 1,000 layoffs

By Wylie Wong, Stewart Deck and Laura DiDio

NOVELL, INC., slung by poor sales of its network software, announced a \$14.6 million second-quarter loss last week and said it plans to lay off 1,000 workers.

Novell surprised analysts, who expected the Provo, Utah, company to post a small profit. Since late February, Novell stock has lost close to 40% of its value. It closed

**QUARTERLY REPORT** Thursday, July 27/97

Company officials blamed slow sales in the small and midsize business markets. Also, Novell's NetWare has lost market share to Microsoft's Windows NT.

"Novell is a company in transition, and it's doing what it has to do to get back on track. I don't think this will be the last restructuring initiative we'll see," said Mary McCaffrey, a principal at Alex. Brown & Sons, Inc., a New York broker.

Novell Chairman and CEO Eric Schmidt said the company will cut the 1,000 employees — 18% of its workforce — over the next several months. The layoffs will reduce Novell's staff to about 4,600.

Frank Kierkegaard, an analyst at PAW Partners, a brokerage in Greenwich, Conn., said Novell's job reductions will help control costs. But, he added, Novell "is in a real tough spot right now. They have no revenue growth, they're under siege by Microsoft and other Internet technologies, and they aren't well positioned."

The root of Novell's problems, Michell said, is the lack of revenue growth from the company's NetWare line, "and that problem is going to be tough as hell to fix."

Company officials said Novell won't ship additional products to distributors in the third quarter to reduce its unsold products inventory. That move will decrease revenue and result in a third-quarter loss, the officials said. Novell will still ship previously announced products.

## I2 says 'I do' to packaged goods

### ► Customers demand supply-chain strategies

By Randy Weston

SUPPLY-CHAIN management software vendor I2 Technologies, Inc. is taking on the consumer packaged-goods industry with an offering tailored specifically to that market.

The Irving, Texas-based company's system includes enhanced distribution, logistics and transportation planning features, which are all key factors for the consumer packaged-goods market.

It also has made several recent acquisitions to beef up its supply-chain analyst.

Harry Tee, an analyst at The Yankee Group in Boston, said I2's timing is right for entering the industry, which has yet to be targeted by any of the major client/server vendors.

Only I2 and chief rival Manugistics, Inc., are competing to meet the hefty distribution and inventory planning demands of the industry. Oracle Corp. has

port together an enterprise package, but the major distribution and supply-chain planning pieces are from third-party vendors, including Manugistics.

The consumer packaged-goods industry is clamoring for advanced logistical planning software because its customers, mainly retailers such as megaplayer Wal-Mart Stores, Inc. in Bentonville, Ark., demand just-in-time delivery of everything from potato chips to diapers.

"The consumer package area is the biggest market and the most well-defined and understood market," Tee said. "I2's software is fast, and it looks like they have all the major bases covered."

But it was the recent \$446.6 million acquisition of Think Systems, Inc. in Cambridge, Mass., which has allowed I2 to truly compete in the arena, Tee said.

"Think Systems gives them

demand planning and forecasting," he said.

British American Tobacco Industries PLC, maker of Benson & Hedges and Lucky Strike-brand cigarettes, is having a reorganization of its European operations on I2's offering.

The tobacco company has traditionally operated as a holding company with many independent subsidiaries reporting to headquarters in Great Britain. It now hopes to save about \$20 million per year from the initial \$4 million investment in software licenses and installation by centralizing its supply-chain management operations.

"The key benefit we are looking for is, first of all, central visibility of the supply chain across the European region," said Steve Weller, operations IT manager at British American Tobacco. "The next thing would be to reduce inventory levels and then to improve customer service levels by developing supply-chain strategies that address customer service," such as duplicate performance and order-fill rates.

**Greater Step & Step automates bill-paying with EDI system.** Page 53

### I2's consumer packaged-goods software package

Module	Function
Demand management	Generates forecasts for manufacturing schedules as well as distribution, sales and marketing tactics
Logistics	Analysis tool for transportation modeling and analysis; generates geographic, tabular and graphical reports; provides real-time information on in-transit shipment status; has an early-warning device for shipping problems
Planning and deliveries	Inventory management tool for stockpile level analysis and scheduling



# Computer Industry

## Rivals nip at EMC's heels

By Tim Ouellette

SEVERAL RIVALS are boosting the performance of their disk arrays to challenge EMC Corp. in the \$7.5 billion open systems storage market.

Last week, Sun Microsystems, Inc. agreed to acquire crucial data sharing technology that will help its systems store both mainframe and open systems data from distributed Unix and PC-based servers.

Data General Corp. in Westboro, Mass., plans a June 2 announcement outlining its new Clarion disk arrays' use of fibre channel technology, a high-speed data interface.

And upstart MTI Technology Corp. plans to give its Gladiator series of RAID disk arrays the capability to act as solid-state

disks, akin to internal high-speed system memory, for use with mission-critical database applications.

"Before, a lot of enterprise storage vendors like Data General Corp., MTI and Sun weren't even in the ballpark [with EMC]," said Sean Derrington, an analyst at Meta Group, Inc. in Stamford, Conn. "Now, everyone is reaching performance parity."

EMC, in Hopkinton, Mass., has led the market with high-performance systems. Other leaders include IBM and Hewlett-Packard Co.

Sun is getting there by buying the storage business and technology of Encore Computer Corp. in Fort Lauderdale, Fla., for \$18.5 million. Encore's Infinity SP arrays let users store

Vendor	1996 Revenue	Growth rate (Q196 to Q1995)
EMC	\$668M	24%
Sun	\$467M	25%
Data General	\$133M	40%
MTI	\$93M	160%

Source: International Data Corp., Framingham, Mass.

mainframe and open systems data in the same box and has been one of the few real competitors to EMC's Extended Storage Platform technology.

Sun's move bolsters the Mountain View, Calif., firm's plans to become a major storage provider to users running more than just Sun servers (CW, May 12). Sources said the transition could take a while, though.

In the meantime, MTI, in Anaheim, Calif., is going head-to-head with EMC in contract competitors. MTI is picking its battles by focusing on niche situations where users need high

speed database storage.

"Our people seek out users running major databases," said Richard Rickin, MTI's vice president of business development.

Besides speeding up Gladiators 3200 with the solid-state disk feature this summer, MTI has doubled the speed of the array via a new UltraS3 interface and faster controller.

And the firm is taking a page out of EMC's service book by offering a Phone Home service, which automatically notifies MTI service staff if a failure occurs in a customer's disk array. □

## Novell loss triggers 1,000 layoffs

By Wylie Wang, Stewart Duck and Laura DiDio

NOVELL, INC., stung by poor sales of its network software, announced a \$14.6 million second-quarter loss last week and said it plans to lay off 1,000 workers.

Novell surprised analysts, who expected the Provo, Utah, company to post a small profit. Since late February, Novell stock has lost close to 40% of its value. It closed

**QUARTERLY REPORT** at 7/27/97 Thursday.

Company officials blamed slow sales in the small and midsize business markets. "We have the largest market share in Microsoft Corp.'s Windows NT

"Novell is a company in transition, and it's doing what it has to do to get back on track. I don't think this will be the last restructuring initiative we'll see," said Mary McCaffrey, a principal at Alex. Brown & Sons, Inc., a New York brokerage.

Novell Chairman and CEO Eric Schmidt said the company will cut the 1,000 employees—18% of the workforce—over the next several months. The move will reduce Novell's staff to about 4,500.

Frank Michonoff, an analyst at PAW Partners, a brokerage in Greenwich, Conn., said Novell's job reductions will help control costs. But, he added, Novell "is in a real tough spot right now. They have no revenue growth, they're under siege by Microsoft and other Internet technologies, and they aren't well-positioned."

The most of Novell's problems, Michonoff said, is the lack of revenue growth from the company's NetWare line, "and that problem is going to be tough as nails to fix."

Company officials said Novell won't ship additional products to distributors in the third quarter to reduce its unsold product inventory. That move will decrease revenue and result in a third-quarter loss, the officials said. Novell will still ship previously announced products. □

## 12 says 'I do' to packaged goods

► Customers demand supply-chain strategies

By Randy Weston

SUPPLY-CHAIN management software vendor Ia Technologies, Inc. is talking on the consumer packaged-goods industry with an offering tailored specifically to that market.

The Irving, Texas-based company's system includes enhanced distribution, logistics and transportation planning features, which are all key factors for the consumer packaged-goods market.

Ia also has made several recent acquisitions to beef up its software package.

Harry Tse, an analyst at The Yankee Group in Boston, said Ia's timing is right for entering the industry, which has yet to be targeted by any of the major client/server vendors.

Only Ia and chief rival Manugistics, Inc. are competing to meet the hefty distribution and inventory planning demands of the industry. Oracle Corp. has

put together an enterprise package, but the major distribution and supply-chain planning pieces are from third-party vendors, including Manugistics.

The consumer packaged-goods industry is clamoring for advanced logistical planning software because its customers, mainly retailers such as megaplayer Wal-Mart Stores, Inc. in Bentonville, Ark., demand just-in-time delivery of everything from potato chips to diapers.

"The consumer package area is the biggest market and the most well-defined and understood market," Tse said. "Ia's software is fast, and it looks like they have all the major bases covered."

But it was the recent \$146.6 million acquisition of Think Systems, Inc. in Cambridge, Mass., which has allowed Ia to truly compete in the arena, Tse said.

"Think Systems gives them

demand planning and forecasting," he said.


British American Tobacco Industries PLC, maker of Benson & Hedges and Lucky Strike brand cigarettes, is basing a reorganization of its European operations on Ia's offering.

The tobacco company has traditionally operated as a holding company with many independent subsidiaries reporting to headquarters in Great Britain. It now hopes to save about \$40 million per year from the initial \$4 million investment in software licenses and installation by centralizing its supply-chain management operations.

"The key benefit we are looking for is, first of all, central visibility of the supply chain across the European region," said Steve Weller, operations IT manager at British American Tobacco. "The next thing would be to reduce inventory levels and then to improve customer service levels by developing supply-chain strategies that address customer service, such as due-date performance and order-fill rates. □

**Greer Step & Step automates bill-paying with EDI system. Page 53**

# Separated at birth?



Sun and PeopleSoft. Together we provide solutions that scale across the entire enterprise. Solutions that deliver the performance and reliability modern business demands. Jointly, we are committed to delivering universal access to business information worldwide, whether it be through an intranet, extranet, or on the Internet. All with a level of quality that's winning over customers around the globe, from recently merged healthcare organizations to the largest retailers in the world. In short, it's the sort of alliance that gives you not just technology, but superior answers to business challenges. To find out more about what we can do for your organization, contact Sun at [www.sun.com/sepcw](http://www.sun.com/sepcw) or PeopleSoft at [www.peoplesoft.com](http://www.peoplesoft.com) or 888-PSFT-APPS. **THE NETWORK IS THE COMPUTER™**

©1997 Sun Microsystems, Inc. All rights reserved. Sun, Sun Microsystems, the Sun logo, and The Network is The Computer are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries. PeopleSoft and the PeopleSoft logo are registered trademarks of PeopleSoft, Inc. "Separated at birth" is a registered trademark of PFT Software.

## Smart thinking It was 40 degrees in Zurich and

slating rain from a darkening sky when I found the phone booth. Salvation, I thought. I could call my appointment and ask for directions to my halting, phrase-book German.

But as I searched in vain for a coin slot in that Swiss phone booth, two little words zoom up through my soggy dismay. Smart cards. Those intelligent, multi-function couples of credit cards, which Europeans today use to very sensible advantage at banks, grocery stores, post offices, train stations and phone booths such as the one I was standing in.

While I'll probably never want a smart card quite as desperately as I did that day in Zurich, I welcome their long-overdue arrival into American life and business.



Industry analysts say today's paltry \$230 million U.S. smart-card market will blossom to \$2.8 billion by 2001. The lineup of companies readying smart-card products includes every major player in the computer industry, as well as

Mastercard, Visa and BankAmerica.

Even more significantly, the usual squabbling over various standards has all but subsided. Just a few weeks ago, IBM and Sun joined the PC/SC Workgroup, a smart-card standards consortium that includes archrivals such as Microsoft and Hewlett-Packard.

By year's end, smart-card applications and compatible products will be proliferating like mad, aimed at everything from conducting electronic commerce to enabling secure access to corporate intranets.

HP, for example, will ship Vectra PCs in the third quarter with a smart-card reader built in to the keyboard. A few months later, IBM will roll out an operating system and multiple applications for smart cards. Sun will hawk Java Card technology so network computer users can store encrypted information and files on smart cards.

I'm willing to overlook the fact that Europeans got smart about smart cards long before we did. If ever I get one of their phone booths to work, I'm sure they'll be willing to overlook my German, as well.

*MaryAnn Johnson*

MaryAnn Johnson, executive editor  
Internet: maryann.johnson@cw.com



## Computerworld's Fogarty committed fraud — keep it up!

THERE'S A FIFTY THIEF in our midst. In his Opinion column, ["None of their business," CW, April 28], Technical Sections Editor Kevin Fogarty bragged about how he had falsified an application for a supermarket discount card to get the discount — without getting the targeted junk mail that comes along with it.

In other words, Fogarty committed fraud in order to receive monetary discounts and products. That's theft. It is no less significant than shoplifting. And like every criminal behind bars, he found a way to blame his victim for the crime.

Fogarty should be sentenced to 10 semester hours of business ethics at the local college and then write a column on what he learned.

Phil Goodwin  
Boulder, Colo.  
102421.173@compuserve.com

WELL SAID. I agree completely with your editorial. Almost as bad as store clerks calling you by your name after making a purchase is if they were your best friend. Keep up the good work.

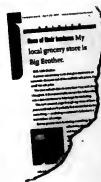
Jennifer Hatanai  
Orlando, Fla.

I LAUGHED OUT LOUD when I read Fogarty's opinion. I do the exact same thing, trying to reduce the number of sales calls at the exact moment we all sit down to dinner each evening.

I also bate going to Radio Shack, where I once had a heated discussion trying to buy batteries with cash for my granddaughter's boom box. I didn't want to give my name

there, either.

I frequently give slightly differ-



ent variations of my name to mail-order companies just to see how far and wide their lists are sold.

Ann Hearn  
Stamford, Conn.

## Faulty big iron DBMS survey

YOUR COMPARISON of database satisfaction Survey, CW, April 21] does not make sense. For example, it says IMS and DB2 were on par with each other.

How can that be? One is an old-fashioned but production-powered online transaction processor database; the other is a modern relational database, which has failed in many places despite its wide popularity. The same goes for Computer Associates International, Inc.'s databases. One of the CA databases, CA-IDMS, is one of the very best on the mainframe.

CA-IDMS users stand by the

product, even if they are critical of CA's support and development priorities. CA-IDMS is still used in more than 2,500 sites worldwide, in spite of ferocious negative propaganda in trade journals, including Computerworld. It seems your survey is about the vendors and not DBMSs.

Monroe Tig  
Editor, IDMS/5/5/5 News  
Oslo


Editor's note: The survey specifically measured customer satisfaction, not product characteristics.

## Stay-on contract looks good

PEOPLE WHO pooh-pooh stay-on contracts surprise me. I've been trying for quite some time just to get my foot in the door in the information systems field, without success. The first company that says, "We'll hire and train you, but we'd like you to stay at least one year," I would join right then and there. There are lots more of us out there who would almost instantly accept such a contract than Computerworld thinks.

Tim Lyczko  
Syosset, N.Y.  
tlyczko@vernetech.com

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to MaryAnn Johnson, Executive Editor, Computerworld, PO Box 9171, 900 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.



*Grant me the strength to resist fate,  
The wisdom to recognize legitimate plans,  
And the sheer blind luck to know the difference.*

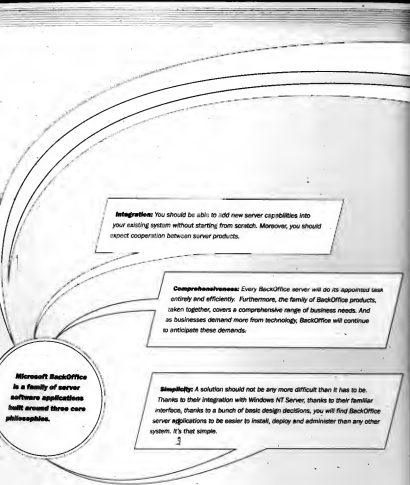
*The IS Manager's Prayer*

So, what makes BackOffice different?

*Now, for the first time, we can offer you not just another bunch of applications but a sane and sensible approach to evaluating technology solutions. It's called Microsoft® BackOffice® and it delivers something you probably don't expect from technology—simplicity.*



**BackOffice works** on Windows NT® Server and Windows NT Server works on pretty much any system you might have in place. You can add a single Windows NT Server into your NetWare or UNIX environment and start running a BackOffice-based solution tomorrow. And Windows NT Server is tremendously scalable. So you can actually move the technology forward in well-planned steps. Instead of the white knuckle, all-or-nothing leaps it people are frequently forced to make.



**Integration:** You should be able to add new server capabilities into your existing system without starting from scratch. Moreover, you should expect cooperation between server products.

**Comprehensiveness:** Every BackOffice server will do its appointed task entirely and efficiently. Furthermore, the family of BackOffice products, taken together, covers a comprehensive range of business needs. And as businesses demand more from technology, BackOffice will continue to anticipate these demands.

**Simplicity:** A solution should not be any more difficult than it has to be. Thanks to their integration with Windows NT Server, thanks to their familiar interface, thanks to a bunch of basic design decisions, you will find BackOffice server applications to be easier to install, deploy and administer than any other system. It's that simple.

3

**Microsoft BackOffice**  
is a family of server  
software applications  
built around three core  
philosophies.

As does BackOffice, so does Windows NT Server. These three philosophies also apply to the relationship between BackOffice server products and Windows NT Server. Not only is Windows NT Server famously easy to administer, but its integration with the BackOffice family of products means that most administration tasks need only be performed once—for example, you just create one account per user, no matter how many applications they use. And Windows NT Server is inherently scalable—you can run a single Windows NT Server in a silent environment or you can build a global network that runs entirely on Windows NT.



#### **What about the Internet?**

For quite some time now people have been promising you that the Internet/intranet would change the way you do business. But they never explained how that was supposed to happen. Microsoft BackOffice provides a range of software solutions that embraces Internet standards and provides all kinds of Internet and Intranet functionality. Giving people access is easier. Creating killer Web sites is easier. Creating an extranet for your outside vendors and partners is easier. Doing business on the Web is easier. And that makes it easier to decide on a smart Internet/intranet strategy for your company.



**Well, what about IIS?** Microsoft Windows NT Server has an Internet strategy built in. It's called Internet Information Server. IIS lets you create, deploy and administer a simple Web site or a full blown corporate intranet. IIS lets people in your organization view information stored in BackOffice or existing systems using a standard browser. IIS includes: Active Server Pages so programmers and designers can create dynamic content; FrontPage® server extensions for one-button publishing to the Web; NetShow™ conferencing software for multimedia on the Web; and more.



## [www.microsoft.com/backoffice/](http://www.microsoft.com/backoffice/)

There is a BackOffice product for every business problem we can name. When you come up with more problems, we'll come up with more BackOffice solutions.

### Windows NT Server

This is a multipurpose operating system capable of handling applications, file-and-print, communications and the Web. It includes Internet Information Server, a powerful transaction server and DNS server. And, by the way, it's the operating system that makes BackOffice work. We believe it is the future of network computing.

### Exchange Server

This is an Internet standards-based server that delivers powerful messaging and collaboration capabilities. More than e-mail, Microsoft Exchange Server gives you business solutions like scheduling, group contact lists and task management.

### SQL Server

This tremendously scalable, high-performance RDBMS features Internet integration, integration with desktop tools and applications, and an open-system architecture, making it a superior platform for delivering line-of-business and data warehousing solutions.

### Systems Management Server

This allows you to centrally manage and troubleshoot your entire PC network—desktop and server computers. You can inventory hardware and software, deliver new software and perform diagnostic services—all from a single location.

### SNA Server

SNA Server gives PC network users reliable access to host systems—from AS/400 machines to large mainframe systems. SNA Server can be used to support line-of-business applications like decision support, Internet/intranet access and online transaction processing.

### Proxy Server

Proxy Server allows you to extend secure Internet access to the entire organization, easily and cost-effectively.

### Future Servers

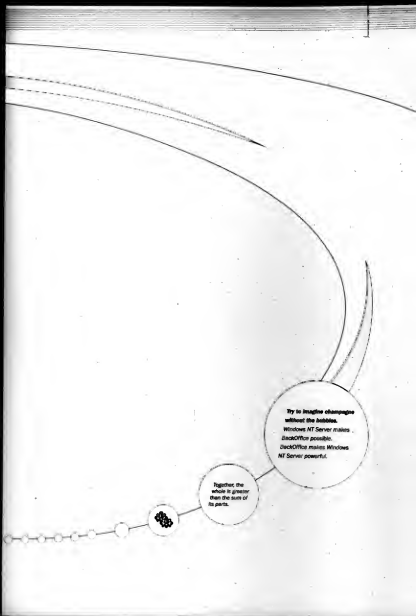
We are working on new server solutions and technologies right now—increasingly sophisticated online commerce solutions, for example, and the next generation of tools for the rapid creation of rich Web sites and Web-based business applications. You can count on seeing these and other new ideas built into BackOffice with the same attention to integration, comprehensiveness and simplicity that sets our current products apart.

**Microsoft**

### Where do you want to go today?\*

There is a wide range of products in the BackOffice family. You can get them in two different ways.

**One-stop:** get the BackOffice Server suite—including Windows NT Server, Exchange Server, SQL Server<sup>™</sup>, Systems Management Server and SNA Server. **Pick-and-choose:** get any individual server or combination of servers according to what you need and when you need it.





BackOffice is not a noun.  
BackOffice is an adjective. For  
example, if you did your job well,  
collaborated effectively with your  
coworkers and were basically  
enjoyable to work with, you'd be  
a BackOffice kind of person.





[www.microsoft.com/backoffice/](http://www.microsoft.com/backoffice/)



# Unified messaging means no escape

Michael Cohn

I want to be out of touch. Once in a while, I need to be off-line, off-duty and off-limits. But there's a disturbing new techno-trend trying to put an end to all this: unified messaging (UM).

UM funnels E-mail, voice-mail, faxes and paper messages to one checking accessible by PC, personal digital assistant or telephone. It's essentially the convergence of every type of messaging you can think of onto every type of platform you can think of, resulting in a combination you really don't want to think of.

Because, now we have no escape. Life, as we know it, is over. "Sorry, boss, I'm checking voice-mail this morning, not E-mail doesn't fly anymore." "No one told me about the five o'clock meeting!" doesn't cut it. From now on, we're always in reach — plugged in and ready to go.

**Life as we know it is over. From now on, we're always in reach — plugged in and ready to go.**

From the 'net, we can play voice-mail over PC speakers. From a phone, a not-so-friendly electronic voice can read us our E-mail. The word was fine for decades with little pink while-you-were-out pads. But now there's UM, and we're signed up for our self-destruction.

I suppose there's a bright side here — you can get E-mail without lugging your laptop all over creation. That could mean

no more notebooks on planes. In hotel rooms. At the movies. All right, maybe I've never seen someone bring a laptop to the movies, except possibly to figure out why it costs \$16.50 for two containers of popcorn and a Diet Coke.

But look at all the downside. Had enough of those run-on, five-minute voice-mails? Just wait until you phone in to hear your E-mail and find yourself listening to a 24-page download on the can't-miss opportunities in pork belly futures.

#### KEEP IT DOWN, FREIDA

Even worse, playing voice-mail through your PC is like having a speaker phone. So think twice before you fetch last night's voice-mail from Freida explaining why you're scum because you showed up 45 minutes late, didn't pick up the check and left two marks all over her freshly painted chrysantheums.

And as if UM weren't bad enough, technology has gone so far as to provide us "smart" digital cellular phones with tiny screens, which puts UM in the palm

of your hand. Smart phones can receive faxes, pages and E-mail and can browse the Internet. If you want to be a mover and shaker, you'll have to be one. But you'll question the "smart" part when your monthly phone bill rivals the gross national product of several Central American nations.

Unfortunately, the bottom line is that, from this day forward, we're toast. UM makes us ubiquitous. Universal. Useful 'round the clock.

But I'm not euphoric about UM. I've had enough E-mail. I'm vengeful by voice-mail. I'm all out.

If anybody's listening: I'm busy right now. Leave a message at the tone. Because I'm working as hard as I can already. I'm burnt out. I'm tired.

Maybe UM is the next great leap for communications. Maybe someday I'll get excited about it. But for now, I'll be excited just to leave the phone off the hook. ... I really could use a good night's sleep. □

Michael Cohn, a computer consultant, would diligently dial in from Atlanta, except he keeps getting a busy signal.

# The changing economics of IS

John Gantz

So your IS budget will be cut next year because corporate profits will be skinnier, at least according to Paul Strassmann (CW, May 12). He says it will be the first real downturn in eight years and will be a shocker for many IS professionals. Look for cost savings to fund the cuts.

He may be right. I don't know. But I think there's a bigger picture here. The fundamental economics of corporate technology are changing, and IS no longer holds all the cards.

Let's start at the top, with how much companies spend on IS. The standard way to look at it is as a percentage of overall revenue — 1%, 2% and so on. But as someone who works in a company that surveys users about what they spend on IS, I can tell you that nobody really knows. The IS manager needs one budget, the CFO another and user departments yet another. Depreciation and capitalization, policies vary from one company (or division) in the next, as do the buckets in which IS expenditures are captured. Lots of spending (and lots of return) isn't identified.

What I can tell you is that spending on IS is growing as a percentage of overall

revenue — and growing rapidly. Industry revenue growth makes that plain. With the advent of Web-based applications, electronic commerce and customer automation, that percentage will climb even more. None of this 1% or 2% stuff — we're talking 20%, 30%, or 40% of revenue.

In short: Yeah, your budget may be cut next year. But others around you will be spending more on IS.

That's a macro view. At a more micro level, changes are going on that will permanently alter the financial equations that have governed IS since the IBM 360 days. (Well, may be not that far back, when everything was rented from the manufacturers.)

There is less leasing going on and what leasing

there is increasingly is being bundled with service options. And many companies now expense PCs rather than depreciate them, having learned the lessons of technological obsolescence.

#### THE LABOR EQUATION

Perhaps even more significant is the funding of the labor pool.

The trend toward outsourcing continues to grow, and many corporations now routinely seek both internal and external bids for projects. Most companies at any given time have more than one outsider working in their IS midst.

In my neck of the woods, where unemployment is low, many star IS performers won't even work at a corporation — project work

has gotten too lucrative.

Then there are offshore programmers, which the U.S. IS community has been grumbling about for 20 years. Only long distances and tricky communications kept them from being a more serious option for most companies. But a new trend is to bring offshore programmers onshore.

For one major development, my company imported programmers from India to our Hong Kong office, where the project started. When we globalized the application, the programming team was more than willing to move to California for the development effort. They share apartments, work night and day, and get precious time in the U.S. Everybody's happy.

A coda to the story: The cost of this application, which is significant, isn't captured in our IS budget. Instead it is buried in the product development costs of one of our major product lines.

Is there anything you should be doing about this? Yes. Make sure you're involved with those big applications going on outside your own budget. That way lies job security. □

Gantz is a senior vice president at International Data Corp. in Framingham, Mass. His Internet address is jgantz@idcresearch.com.

**The fundamental economics of corporate technology are changing, and IS no longer holds all the cards.**

# technology

(800) 836 8282, Dept B-407



***wranglers.***

Client/Server

Systems Management

Applications Support

Internet

CERTIFIED PROFESSIONAL

## COMMENTARY

## Getting out of NT's way

DAVID MOSCHELLA

**A**LTHOUGH IT'S TEMPTING to see Microsoft's and Novell's recent New York press confer-

ences in the context of the ongoing Windows NT vs. NetWare debate, the reality is that the two events were more symbol-

ic of separation than competition. While Microsoft was claiming victory in the server operating system war, Novell was humbly beginning to seek prosperity elsewhere.

Press coverage understandably focused on the validity of Microsoft's NT scalability claims. But Bill Gates' main mantra was more



basic and couldn't be contested. As the Microsoft executive team stated simply and repeatedly, "The model is working."

By that, Microsoft means NT is an unsurpassable at the center of a powerful loop of positive feedback. NT soft-

ware improvements drive volume; rising volume keeps prices low and gains vendor support; vendor support enhances quality; quality drives more volume. No other server operating system has anything close to this self-reinforcing dynamics.

With NT gobbling up both the workstation and departmental server business, Unix vendors have retreated to the still-lucrative high end. But is there any doubt that with the ever-improving Winchip system and software technology, any remaining Unix performance edge will prove relevant to a declining share of the overall market?

Sun Microsystems has shown strong performance, but its success is beginning to resemble that of the System/390 or AS/400. Both IBM systems continue to sell well but only as the last surviving breeds of the otherwise decaying mainframe and minicomputer markets. Sun is on track to become the one big Unix success. Like the Unix vendors, Novell is scrambling to get out of NT's way. CEO Eric Schmidt's main challenge is to provide enough value to justify NT/NetWare coexistence. At the department level, that's becoming impossible. So Novell, like Unix, is moving on to more complex, high-end services.

Those new activities are broadly grouped into Novell's BorderManager, which aims to enhance the Internet through services such as firewalls, proxy caches and virtual private networks.

It's an important and relatively open field but one that Microsoft also is targeting through its increasingly close cooperation with Cisco. The two are already tackling issues such as directory services, virtual private networks and network management.

Novell hopes that through focus and execution, it can outrun this powerful but untested alliance. Cisco, predominantly a hardware company, might stumble in software. Or Microsoft, not known for software partnerships, might find it difficult to accommodate Cisco's Internet-working Operating System software. Perhaps NetWare synergies will eventually prevail. Perhaps it's all wishful thinking.

The bottom line is that NT is a juggernaut, and Novell and the Unix crowd have no choice but to get out of the way. Unix vendors are seeking refuge in the data center, while Novell is trying to tame the Internet. The Unix strategy seems safe but less than exciting. Novell's plan has more upside but is fraught with risk. Neither is great, but as long as NT controls all the main roads, they're really the only paths available. □

Moschella is senior vice president of research at Computerworld, Inc. His Internet address is david\_moschella@cw.com.

## Make your I.T. skills & training take off with this FREE tool

<http://careeragent.computerworld.com>

Use these FREE features at  
<http://careeragent.computerworld.com>

- Search thousands of course listings from across the Internet at once
- View course details, including course descriptions, fees, and more
- Add courses to your personal list of interests to be reviewed by Career Agent
- Receive e-mail alerts when new courses are added to your list of interests
- Access a Resume Builder, Application Writer, and more
- Receive a free Career Agent CD-ROM

Visit [www.agent.computerworld.com](http://www.agent.computerworld.com)

Search Thousands of Course Listings From across the Internet at once

View Course Details

Highlight Package Listings of Interest

Build a Personal List of Courses of Interest

Receive e-mail Alerts

Access a Resume Builder

Application Writer

and more

Receive a free Career Agent CD-ROM

Visit [www.agent.computerworld.com](http://www.agent.computerworld.com)

or call 1-800-368-3683

For more information

visit [www.agent.computerworld.com](http://www.agent.computerworld.com)

or call 1-800-368-3683

For more information

visit [www.agent.computerworld.com](http://www.agent.computerworld.com)

or call 1-800-368-3683

For more information

visit [www.agent.computerworld.com](http://www.agent.computerworld.com)

or call 1-800-368-3683

For more information

visit [www.agent.computerworld.com](http://www.agent.computerworld.com)

or call 1-800-368-3683

For more information

visit [www.agent.computerworld.com](http://www.agent.computerworld.com)

or call 1-800-368-3683

For more information

visit [www.agent.computerworld.com](http://www.agent.computerworld.com)

or call 1-800-368-3683

For more information

visit [www.agent.computerworld.com](http://www.agent.computerworld.com)

Free From

**COMPUTERWORLD**

**CAREER  
AGENT**  
careeragent.computerworld.com

Introducing the TravelMate® 7000



**THE 7-HOUR** TravelMate 7000 is at home at  
the office or on the road. And, it has the brains to know the difference.

With a single battery that keeps you fully-functional for 7-hours\*, the Texas Instruments® TravelMate® 7000™ outperforms any mobile solution in its class. Snap it into the automatically configuring DockMate™ III and you have a desktop that easily connects to all your peripherals. With cutting-edge technology, it's no wonder Acer® is the fourth largest notebook manufacturer in the world. Just look at the TravelMate 7000. You won't find anything more intelligent.

**VeriTest: Battery Life Results in Hours\*\*\***

TravelMate 7000 (166MHz MMX)	7:26
IBM ThinkPad 760ED (133MHz)	2:38
Toshiba Tecra 720 CDT (133MHz)	2:38
Dell Latitude XP1 (60MHz)	4:15
HP Omnibook 5500 CS (100MHz)	2:35



1-800-558-ACER [www.acer.com/usac/](http://www.acer.com/usac/)

\*\*TravelMate 7000 and DockMate III are products of Acer America Corporation. Developed with Texas Instruments.

©1997 Acer America Corporation. Acer and the Acer logo are registered trademarks of Acer America Corporation and Acer Inc. TravelMate and DockMate are registered trademarks of Acer Inc. Texas Instruments and the Texas Instruments logo are registered trademarks of Texas Instruments Incorporated. Intel, The Intel Inside logo, and Pentium are registered trademarks, and MMX is a trademark, of Intel Corporation. Windows, Windows 95, and Windows NT are registered trademarks of Microsoft Corporation. \*1 hour battery life based on VeriTest Core Country and Month 1997 testing. Windows 95. \*\*Real results available at [www.acer.com/usac/VeriTest.htm](http://www.acer.com/usac/VeriTest.htm)

# How long will it take before you with their credit

{ Imagine if it

The impact on your business would be enormous. The ROI nearly immediate. But the revenues generated from secure credit card transactions are just the beginning. Suddenly you're able to share confidential information over the Internet with your customers, employees and business partners. Your business becomes more efficient and competitive.

So what does it take to begin? A partner who truly understands the impact networking can have on your business, and knows how to implement it down to the last strand of wire and the last packet of data. We're that partner. Our technologies

# your customers finally trust cards over the Internet?

happened next month. }

With the Internet, a great business idea is no longer enough. You need software and marketing know-how to secure business transactions of all kinds. Right now, you need more.

Or visit our Web site at [www.entrust.com](http://www.entrust.com)

After all, there's nothing as fast as entrusting your business to Entrust.



SYSTEM  
CRASH

NEW DIVISION  
IN TUSCALOOSA

MEASURING  
USER DEMAND

YET ANOTHER  
PARADIGM SHIFT



## HP SERVICES AND SUPPORT

You've got problems. We've got solutions. HP Services and Support provides on-site assistance and technical support, 24 hours a day, 365 days a year. Our complete portfolio of computing services helps reduce system problems, shorten downtime and quickly recover systems when trouble arises. Which means more productivity for your enterprise, and fewer problems for you to crack. For more details, visit us at [www.hp.com/go/service](http://www.hp.com/go/service).

# Servers & PCs

Large Systems • Workstations • Portable Computing

## Briefs

### MAINFRAME TIDBITS

- The mainframe market will hover at about \$21 billion with little growth this year
- Processor prices could break below \$10,000 per MIPS this year
- 80% of mainframes IBM shipped last year had CMOS processors
- Mainframe product cycles have dropped from four years to 12 to 18 months

Source: International Data Corp., Boston

## Delta flies kiosks to land new sales

By April Jacobs

DELTA AIR LINES is banking on kiosks and electronic commerce to help bring its business into the 21st century with a pilot program that lets travelers do the talking.

Delta last week rolled out six kiosks near its Atlanta headquarters at spots such as the airport and shopping malls.

The kiosks let consumers talk in real time with an airline ticketing agent and communicate with the company via the Internet. The kiosks use Dell Computer Corp. PCs with 233-MHz Pentium II processors with MMX multimedia capabilities. They will let users buy or receive flight tickets, register for Delta's frequent flyer program or check a frequent-flyer account.

### COST-EFFECTIVE PROJECT

Byron Gilstrap, a project manager at Delta, said improvements in desktop hardware — such as the Pentium II with MMX — are making electronic commerce more practical and manageable than ever before.

To make the project cost-effective, Delta is piggy-backing the kiosk application onto an already extensive reservations system. The video connection is a dedicated Integrated Services Digital Network line. And the



Delta's Byron Gilstrap. Electronic commerce is becoming more practical

company was able to train reservations employees in only a few weeks to serve kiosk users.

Delta's pilot program, which is similar but more comprehensive than those offered by competitors United Airlines and American Airlines, points to a less expensive and more direct way of doing business, said Andrew Winston, a computer scientist and economist at the University of Texas at Austin.

### NEW SERVICES

American Airlines, for example, offers extra frequent-flyer miles on tickets purchased through its World Wide Web site and also has an electronic-mail subscription service, offering weekly cut-

Delta, page 44

## Skyline scales for big shops

By Tim Ouellette

FOR SOME mainframe shops, it has come to a choice between nibbling away at a problem or blowing it out of the water.

Great Western Bank went with the heavy artillery — Hitachi Data Systems Corp.'s Skyline mainframes — to rein in its largest data-center applications.

Hitachi has become the chief architect for shops, such as Chatsworth, Calif.-based Great Western, that are battling to manage a sudden growth in data-center processing and application demands. The growth stems from the increase in MIPS that data centers are ac-

quiring to manage the year 2000 problem, the curbing of some client/server projects and the integration of other client/server efforts with mainframe back-end functions.

Skyline offers a 124-MIPS engine, double that of the CMOS, or air-cooled, mainframe processors sold by IBM. Some users are concerned that IBM's parallel supplies mainframe clustering technology isn't quite mature and are looking for immediate help elsewhere.

"We simply needed the engine speed," said Mike Cunningham, first vice president of shared services at Great Western in Northridge, Calif. Even with a pending merger with Seattle-based Washington Mutual, Inc., Great Western will be able to handle the doubled processing load by adding more processors to the Skyline box, he said.

"There is a percentage of people who are just not going to go to CMOS," said John Webster, an analyst at The Yankee Group

Skyline, page 44

## Storage on the move

► Users seek lightweight, removable drives

By Matt Hamblen

FOR TWO MONTHS, consultant Chris Bledsoe has carted around his multimedia business presentations and databases on a removable hard drive.

"When Bledsoe arrives at a client's office to make a presentation, he plugs in the drive to the parallel port of the client's PC and runs his presentations on the client's monitor.

"It helps me a lot," said Bledsoe, 38, a telecommunications consultant at Solution By Design in Vienna, Va. "The drive and its power pack only weigh a couple of pounds, and that saves me [from] carrying my 12-pound laptop."

Meanwhile, Tom Sandstrom, 29, edits commercial television video presentations at CTS Productions in Spokane, Wash., using digital editing software. He stores the large files on a 1.5G-byte removable hard drive. "I had the editing software last year, but what was limiting me until recently was the storage capacity" on the fixed drive, Sandstrom said.

Because of the added removable storage, Sandstrom said, he can use the digital editing tools and has saved space and money by not using analog editing equipment.

"The drive and its power pack only weigh a couple of pounds, and that saves me [from] carrying my 12-pound laptop."

Solution By Design, page 44



Kiosks let consumers talk in real time with an airline ticketing agent and communicate with Delta via the Internet

Bledsoe and Sandstrom are two among the growing horde of computer users — working in small and large companies alike — who are hungry for lightweight, inexpensive and removable storage devices to hold large files that contain graphics, sound and video. Such workers are changing the

Removable storage, page 44



# Servers & PCs

Large Systems • Workstations • Portable Computing

## Briefs

### MAINFRAME TIDBITS

- The mainframe market will hover at about \$21 billion with little growth this year
- Processor prices could break below \$10,000 per MIPS this year
- 80% of mainframes IBM shipped last year had CMOS processors
- Mainframe product cycles have dropped from four years to 12 to 18 months

Source: International Data Corp., Boston

### Unisys unveils servers

Unisys Corp. recently unveiled a series of Windows NT-based business servers, including one that can be scaled to 16 Pentium Pro processors. The Aquanta Enterprise series will be available within four weeks. Pricing will range from \$15,160 to \$64,570, according to Unisys in Blue Bell, Pa.

### AS/400 to manage PCs

IBM on June 27 will ship Version 5.0 of Netfinity for AS/400, software that lets administrators control attached PCs, perform hardware and software inventory on connected PCs, and ease software distribution. Version 5.0 will support PCs that run Windows 95, Windows 3.1, Windows NT or OS/2. Pricing wasn't available.

### Gateway uses loyal

Gateway 2000, Inc. and Apple Computer, Inc. have the most loyal customers, according to a study by International Data Corp. and A.C. Nielsen Co. The study, "Homestead Tracker 1997: PC Brand Loyalty and Purchase Intentions in U.S. Households," indicates that 51.5% of Gateway 2000 computer owners who plan to buy another PC would buy one from the North Sioux City, S.D. computer maker. Apple, in Cupertino, Calif., came in second in the survey. 45.6% of Apple owners said they would buy another Macintosh. The study surveyed 51,800 households nationwide.

## Delta flies kiosks to land new sales

By April Jacobs

DELTA AIR LINES is banking on kiosks and electronic commerce to help bring its business into the 21st century with a pilot program that lets travelers do the talking.

Delta last week rolled out six kiosks near its Atlanta headquarters at spots such as the airport and shopping malls.

The kiosks let consumers talk in real time with an airline ticketing agent and communicate with the company via the Internet. The kiosks use Dell Computer Corp. PCs with 233-MHz Pentium II processors with MMX multimedia capabilities. They will let users buy and receive flight tickets, register for Delta's frequent-flyer program or check a frequent-flyer account.

### COST-EFFECTIVE PROJECT

Byron Gistap, a project manager at Delta, said improvements in desktop hardware — such as the Pentium II with MMX — are making electronic commerce more practical and manageable than ever before.

To make the project cost-effective, Delta is piggy-backing the kiosks application onto an already extensive reservations system. The video connection is a dedicated Integrated Services Digital Network line. And the



Delta's Byron Gistap  
Electronic commerce is becoming more practical

company was able to train reservations employees in only a few weeks to serve kiosk users.

Delta's pilot program, which is similar but more comprehensive than those offered by competitors United Airlines and American Airlines, points to a less expensive and more direct way of doing business, said Andrew Winston, a computer scientist and economist at the University of Texas in Austin.

### NEW SERVICES

American Airlines, for example, offers extra frequent-flyer miles on tickets purchased through its World Wide Web site and also has an electronic mail subscription service, offering weekly cut

Delta, page 44

## Skyline scales for big shops

By Tom Ouellette

FOR SOME mainframe shops, it has come to a choice between nibbling away at a problem or blowing it out of the water.

Great Western Bank went with the heavy artillery — Hitachi Data Systems Corp.'s Skyline mainframes — to rein in its largest data-center applications.

Hitachi has become the chief arm supplier for shops such as Chatsworth, Calif.-based Great Western, that are battling to manage a sudden growth in database processing and application demands. The growth stems from the increase in MIPS that data centers are ac-

quiring to manage the year 2000 problem, the curbing of some client/server projects and the integration of other client/server efforts with mainframe back-end functions.

Skyline offers a 124-MIPS engine double that of the CMOS, or air-cooled, mainframe processors sold by IBM. Some users are concerned that IBM's parallel sysplex mainframe clustering technology isn't quite mature and are looking for immediate help elsewhere.

"We simply needed the engine speed," said Mike Cunningham, first vice president of shared services at Great Western in Northridge, Calif. Even with a pending merger with Seattle-based Washington Mutual, Inc., Great Western will be able to handle the doubled processing load by adding more processors to the Skyline box, he said.

"There is a percentage of people who will not be going to go to CMOS," said John Webster, an analyst at The Yankee Group

Skyline, page 44

## Storage on the move

### • Users seek lightweight, removable drives

By Matt Hamblen

FOR TWO MONTHS, consultant Chris Bledsoe has carried around his multimedia business presentations and databases on a removable hard drive.

When Bledsoe arrives at a client's office to make a presentation, he plugs in the drive to the parallel port of the client's PC and runs his presentations on the client's monitor.

"It helps me a lot," said Bledsoe, 38, a telecommunications consultant at Solution By Design in Vienna, Va. "The drive and its power pack only weigh a couple of pounds, and that saves me [from] carrying my 14-pound laptop."

Meanwhile, Tom Sandstrom, 29, edits commercial television video presentations at CTS Productions in Spokane, Wash., using digital editing software. He stores the large files on a 1.5-gigabyte removable hard drive. "I had the editing software last year, but what was limiting me until recently was the storage capacity" on the fixed drive, Sandstrom said.

Because of the added removable storage, Sandstrom said, he can use the digital editing tools and has saved space on his workstation by using analog editing equipment.

"The drive and its power pack only weigh a couple of pounds, and that saves me [from] carrying my 12-pound laptop."

— Chris Bledsoe,  
Solution By Design

Bledsoe and Sandstrom are two among the growing horde of computer users — working in small and large companies alike — who are hungry for lightweight, inexpensive and removable storage devices to hold large files that contain graphics, sound and video. Such workers are changing the

Removable storage, page 44



Klesiet lets consumers talk in real time to an airline ticketing agent and communicate with Delta via the Internet



**Cast a wider**

**intra e**



Aquanta intranet servers  
let users access  
more of what they need  
from your data warehouse.

AQUANTA



#### **AQUANTA XR/6 SERVER**

The first enterprise server  
for Windows NT\* with up to  
ten 200 MHz Pentium Pro  
processors. High-  
performance system bus.  
Up to 8GB ECC memory and  
20MB L3 cache. Internal  
RAID. Hot-pluggable drives,  
power and cooling.  
And VisiNet-II systems  
management software.



#### **AQUANTA HS/6 SERVER**

Engineered for maximum  
availability, the HS/6 offers  
up to six 200 MHz  
Pentium Pro processors.  
Dual peer PCI/EISA bus.  
Six RAID-ready bays. 12 slots.  
And up to 4GB ECC memory  
and 512KB L2 cache.  
Plus VisiNet-II systems  
management software.  
Rackmount also available.



#### **AQUANTA DEPARTMENT SERVERS**

Servers with one processor  
to up to four 200 MHz  
Pentium Pro processors.  
Rackmount available for dual  
and quad systems. VisiNet-II  
systems management  
software. Perfect for print,  
file server and LANs.

[www.aquanta-systems.onlayn.com](http://www.aquanta-systems.onlayn.com)

CLICK HERE

to find out about our full line  
of Aquanta products.

When information is everything

## Dell to incorporate managed PC technology into some products

By Rebecca Sykes

DELL COMPUTER CORP. last week announced a schedule to bring managed PC capabilities to some of its desktop PCs and notebooks.

Dell officials said the company will incorporate managed PC technologies, which aim to ease remote configuration and management, into its OptiPlex corporate desktop line and its Latitude notebooks.

### LOWER COSTS

The company will pitch its managed PCs at corporations that want to reduce their total cost of ownership but require systems more flexible than the Windows NT/PC specification.

For example, managed PC technologies can include the ability to lock out ports and buses to ensure security, or smart drive technology, where a disk

drive can signal back to the net why its condition and can be turned on or off by the systems manager.

According to Dell officials, the vendor's products with managed PC capabilities are closely tied to forthcoming manageable products and initiatives from

**Managed PC technology aims to ease remote configuration and management.**

Microsoft Corp. and Intel Corp. Phase II of Dell, due by year's end, will add support for Microsoft's Zero Administration Kit — which is a set of manageability software tools for Windows NT — to OptiPlex and Latitude models.

Dell also plans to add support

for Desktop Management Interface 2.0, a set of instrumentation standards for letting hardware communicate across a network.

Although the company won't commit to specific delivery dates, Dell also plans to support Intel's Wired for Management Baseline Specification. That specification includes remote system boot and configuration capabilities, remote flash and BIOS installation, and remote configuration of system drives, ports and buses.

Later, Dell will provide support for Microsoft's Zero Administration Windows and Windows Management Instrumentation, and the forthcoming industry standard known as Web-based Enterprise Management. □

Sykes writes for the *IDG News Service* in Boston.

### MOSTLY SKYLINE

Hitachi mainframe MIPS shipments

	1996	Q1 1997
Total MIPS shipped	100,000	40,000
Skyline MIPS shipped	75,000	25,000

## Skyline scales for big shops

CONTINUED FROM PAGE A1

in Borton. "Hitachi is winning all the demand left out of users looking for fairly large processors."

Another Skyline site, the U.S. Social Security Administration in Baltimore, has been running since fall. But it expects to add even more Skyline MIPS to handle its overwhelming load, said Robert Vaccaro, the agency's year 2000 coordinator.

Hitachi will continue down this road by shipping a 150-MIPS Skyline later this year [CW, May 5]. Analysts said a 250-MIPS Skyline engine is Hitachi's goal in the next few years. CMOS processors will reach 65 MIPS this summer and depend on IBM's clustering scheme —

which requires altering many large applications — to generate the same power.

"We could have gone with a 10-way CMOS machine, but we

**"Hitachi is winning all the demand left out of users looking for fairly large processors."**

— John Webster,  
Yankee Group

would have been mazed out on Day 1. I mean, in theory, 2,000 chickens could pull a plow," Cunningham said.

Hitachi seems to be latching on to that kind of imagination. Skyline sales have propelled Santa Clara, Calif.-based Hitachi to a 30% mainframe market share, which analysts expect it to retain at least in the near future. Hitachi officials expect to garner at least another 50% MIPS shipment growth this year (see chart).

### CMOS WILL PREVAIL

Even so, CMOS's strengths — huge maintenance and operations savings over older water-cooled technology — coupled with improving mainframe clustering will win most of the market in the long term, observers said.

"Hitachi's success does not mean IBM's CMOS strategy has been thwarted," according to a report by Steve Milunovich, an analyst at Morgan Stanley & Co. in New York. "But Skyline should continue to enjoy good momentum in 1997."

Skyline offers more than just power, though. Hitachi has built up a strong testing tools, Time Machine and Time Warp, in to the hardware — although Hitachi's CMOS Pilot systems also include the tools. The tools provide run-time assessment of year-around-susceptible code without requiring any special hardware.

And Skyline will begin to offer a variety of engine sizes, from 80 MIPS, which will compete directly with the newer 65-MIPS CMOS engines, up to the 150-MIPS systems. □

## Removable storage

CONTINUED FROM PAGE A1

way business is done, analysts said.

"We're all using storage at greater and greater rates every day," said Fara Teo, an analyst at Dataquest in San Jose, Calif. "We'll download Internet files, and just look at how many more PowerPoint presentations there are."

Bioss's removable drive is an EZFlyer 230 from SyQuest Technology, Inc. in Fremont, Calif.

EZFlyer 230 provides 230-M bytes of capacity on a hard drive.

Removable storage drives			
Product	Vendor	Storage capacity	Price
Zip (floppy disk)	Iomega	100M bytes	\$199
EZFlyer 230 (Hard disk)	SyQuest Technology	230M bytes	\$299
Smart 250 (Hard disk)	Auslogix Peripherals	250M bytes	\$299
Jaz (Hard disk)	Iomega	1G byte	\$499
SyJet (Hard disk)	SyQuest Technology	1.5G bytes	\$499

EZFlyer 230 competes with the popular Zip drive from Iomega Corp. in Roy, Utah. Zip holds 100-M bytes on a floppy disk.

### CHOOSING SPEED

Bledsoe owns a Zip drive and an EZFlyer, but he said he prefers the SyQuest product because it has faster data transfer and seek times, which are important with

the very large files he uses.

Bledsoe said he also likes to use the EZFlyer with a laptop, because he can attach it while the laptop is in sleep mode — a much faster alternative than attaching the Zip and having to cold-boot the laptop. "I think the Zip drive is made more for the desktop market," he said.

Technical features such as

those haven't helped SyQuest put a big dent in Iomega's market leadership, observers said. At the same time, vendors such as SyQuest owe a debt to Iomega for that company's skillful marketing has popularized the idea of easy-to-use personal storage devices.

Sandstrom is using a 1.5-g-byte drive from SyQuest called the SyJet to store video clips being edited. The SyJet competes with, for example, the SyJet 250, another popular removable hard drive.

Sandstrom said he likes SyJet because it has a faster transfer time than other drives he has seen. "If you are capturing clip video, you need that speed," he said.

Bledsoe said the only disadvantage to using his EZFlyer drive is that he must carry a bulky power pack everywhere he takes the drive. □

## Delta flies kiosks to land sales

CONTINUED FROM PAGE A1

rate fares to selected destinations. American has tested kiosks but has no plans to start a program, a spokesman said. United has several kiosks at the San Francisco airport for users to check flight schedules.

With such services, airlines "can offer their services at a

lower cost to their customers," Blumstein said. He said airlines potentially win two ways. The airlines may save on fees paid to travel agents, and the services provide a defense against potential rivals in the online ticketing business.

"The airlines are also looking

at something like Amazon.com and trying to pre-empt it," Winston said. Seattle-based Amazon.com is an online bookstore that provides an alternative to traditional bookstores.

Gilstrap said the future of Delta's kiosk program would depend on its early acceptance. Future offerings could include hotel information and reservations, if users want it. "The flexibility for the passenger is what's important," he said. □

# STRAIGHT TALK

☐ Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95\* per year - a savings of over 73% off the single copy price.

First Name  Last Name   
 Title  Company  E-mail address   
 Address   
 Address Stream: ☐ Home ☐ Business ☐ New ☐ Renew Single copy price \$3.00/issue ☐ Cdn ☐ Mex ☐ Eur  
\*U.S. Only Canada \$35, Mexico Central/South America \$15, Europe \$25, all other countries \$25

Please complete the questions below.

1. **BUSINESS/INDUSTRY** (Circle one)
  18. Manufacturer (other than computer)
  22. Professional/Trade/Service
  23. Health/Law/Education
  24. Wholesale/Retail/Trade
  25. Business Service (except D/I)
  26. Government - State/Federal/Local
  27. Communication Systems/Public Utilities/Transportation
  28. Heavy Construction/Manufacturing/Railroad/Agriculture
  29. Manufacturer of Computers, Computer-Related Systems or Peripherals
  30. Systems Integrators/Vendors, Computer Service Bureau, Software Planning & Consulting Services
2. **TITLE/FUNCTION** (Circle one)
  31. Chief Information Officer/Chief President/Asst. VP/IS/PS/DP Manager
  32. Dir/Mgr. MIS Services, Information Center
  33. Dir/Mgr. Network Sys. Data/Tel. Comm. LAN/PC/Mgr. Tech. Planning/Administrative Services
  34. Dir/Mgr. Sys. Development, System Architect
  35. Programming/Management, Software Developer
  36. Computer/Peripheral Dealer/Consultant
  37. Other  (Please Specify)
3. Do you use, evaluate, specify, recommend, purchase? (Circle all that apply)
  41. Engineering, Scientific, R&D, Tech. Management
  42. Sys. Integration/Mfg./Consulting Management
  43. **CORPORATE MANAGEMENT**
    44. President, Owner/Partner/General Mgr.
    45. Vice President, Asst. Vice President
    46. Treasurer, Controller, Financial Officer
  47. **DEPARTMENTAL MANAGEMENT**
    48. Sales & Mktg. Management
    49. Medical/Legal/Accounting/Mfg.
  50. **OTHER PROFESSIONAL MANAGEMENT**
    51. Information Center/Library, Educators, Journalists, Students
    52. Other:  (Please Specify)
4. Which of the following products do you use, specify, recommend or approve the purchase of? (Check all that apply)
  61. Internet browsers
  62. Web authoring/development tools
  63. Do you use the Internet? ☐ Yes ☐ No

# COMPUTERWORLD

BWP 1

# TIMELY NEWS

☐ Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95\* per year - a savings of over 73% off the single copy price.

First Name  Last Name   
 Title  Company  E-mail address   
 Address   
 Address Stream: ☐ Home ☐ Business ☐ New ☐ Renew Single copy price \$3.00/issue ☐ Cdn ☐ Mex ☐ Eur  
\*U.S. Only Canada \$35, Mexico Central/South America \$15, Europe \$25, all other countries \$25

Please complete the questions below.

1. **BUSINESS/INDUSTRY** (Circle one)
  18. Manufacturer (other than computer)
  22. Professional/Trade/Service
  23. Health/Law/Education
  24. Wholesale/Retail/Trade
  25. Business Service (except D/I)
  26. Government - State/Federal/Local
  27. Communication Systems/Public Utilities/Transportation
  28. Heavy Construction/Manufacturing/Railroad/Agriculture
  29. Manufacturer of Computers, Computer-Related Systems or Peripherals
  30. Systems Integrators/Vendors, Computer Service Bureau, Software Planning & Consulting Services
2. **TITLE/FUNCTION** (Circle one)
  31. Chief Information Officer/Chief President/Asst. VP/IS/PS/DP Manager
  32. Dir/Mgr. MIS Services, Information Center
  33. Dir/Mgr. Network Sys. Data/Tel. Comm. LAN/PC/Mgr. Tech. Planning/Administrative Services
  34. Dir/Mgr. Sys. Development, System Architect
  35. Programming/Management, Software Developer
  36. Computer/Peripheral Dealer/Consultant
  37. Other  (Please Specify)
3. Do you use, evaluate, specify, recommend, purchase? (Circle all that apply)
  41. Engineering, Scientific, R&D, Tech. Management
  42. Sys. Integration/Mfg./Consulting Management
  43. **CORPORATE MANAGEMENT**
    44. President, Owner/Partner/General Mgr.
    45. Vice President, Asst. Vice President
    46. Treasurer, Controller, Financial Officer
  47. **DEPARTMENTAL MANAGEMENT**
    48. Sales & Mktg. Management
    49. Medical/Legal/Accounting/Mfg.
  50. **OTHER PROFESSIONAL MANAGEMENT**
    51. Information Center/Library, Educators, Journalists, Students
    52. Other:  (Please Specify)
4. Which of the following products do you use, specify, recommend or approve the purchase of? (Check all that apply)
  61. Internet browsers
  62. Web authoring/development tools
  63. Do you use the Internet? ☐ Yes ☐ No

# COMPUTERWORLD

BWP 1



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES



**BUSINESS REPLY MAIL**

FIRST-CLASS MAIL PERMIT NO. 558 MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

**COMPUTERWORLD**

P O BOX 2044  
MARION OHIO 43306-4144



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES



**BUSINESS REPLY MAIL**

FIRST-CLASS MAIL PERMIT NO. 558 MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

**COMPUTERWORLD**

P O BOX 2044  
MARION OHIO 43306-4144



## NEW PRODUCTS

**SEAGATE TECHNOLOGY, INC.** has announced Seagate Sidewinder 10, a 50-G-byte capacity tape drive.

According to the Scotts Valley, Calif., firm, the tape drive is based on Sony Corp.'s Advanced Intelligent Tape technology standard.

The media was designed with a Memory in Cassette option that provides information retrieval and file access.

Pricing starts at \$4,000.

**Seagate Technology**  
(408) 438-6950  
[www.seagate.com](http://www.seagate.com)

**ELMS SYSTEMS CORP.** has announced the 12-speed CD-ROM Digital Versatile Library, a CD access and management system for organizations that have up to 5,000 CDs.

According to the Irvine, Calif., company, up to 100 CDs can store information online for 65G bytes of capacity.

The Elms Panorama software can organize and track up to 5,000 CDs with a capacity of 3.2T bytes.

Pricing starts at \$5,495.

**Elms Systems**  
(714) 461-9000  
[www.elms.com](http://www.elms.com)

**ELECTROGRAPHICS INTERNATIONAL CORP.** has announced three solid-state air-conditioning systems for electronic enclosures.

According to the Warminster, Pa., company, the three models are 400, 800 and 1,500 British thermal units per hour and are smaller than compressor-based systems. They don't require gas replenishment.

Pricing starts at \$395.

**Electrographics International**  
(714) 443-9190  
[www.electrographics.com](http://www.electrographics.com)

**TEKRAM TECHNOLOGY** has announced How-R-U, an Internet and direct desktop videoconferencing kit.

According to the Fremont, Calif., company, the kit includes the Tekram Caro full-motion video capture card, a desktop color camera and VDOPhone, a videoconferencing software from VDO.Net Corp. in Palo Alto, Calif.

Pricing starts at \$500.

**Tekram Technology**  
(510) 353-6099  
[www.tekram.com](http://www.tekram.com)

**OMNITRON SYSTEMS TECHNOLOGY, INC.** has announced the OmniHawk 4/16, a Token Ring copper-to-fiber converter.

According to the Irvine, Calif., company, it adapts to 4M or 16M bit/sec. networks. It was designed to identify the type of device attached to its unshielded twisted-pair or shielded twisted-pair connector and self-configures accordingly.

It costs \$495.

**Omnitron Systems Technology**  
(949) 350-6510

**IBM PRINTING SYSTEMS CO.** has announced InfoPrint 62, a production quantity printer. According to the Boulder, Colo.,

firm, it can print 62 impressions per minute on 8.5-by-11-in. paper, with a maximum amount of 600,000 pages per month. A 240 dot/in. model or a 300 dot/in. model is available.

Pricing starts at \$60,000.

**IBM Printing Systems Co.**  
(303) 924-4000  
[www.ibm.com](http://www.ibm.com)

**VIEWSONIC CORP.** has announced the portable PJ500 Desktop LCD projector for projecting full-color images of up to 300 inches diagonally.

According to the Walnut, Calif., company, the projector weighs about 20 pounds and supports 800-by-600 resolution or 1,024-by-768 advanced video compression resolution.

The PJ500 Desktop LCD projector includes two 1-W speakers and a motorized zoom and focus lens. It is compatible with video inputs, PCs or Macintoshes.

Pricing starts at \$6,995.

**Viewsonic**  
(909) 869-7976  
[www.viewsonic.com](http://www.viewsonic.com)



As Computerworld, our editorial policy is simple.

If a story is useful and accurate, it runs. If it's also blunt and a bit pugnacious, all the better. Our goal is to provide you, our reader, with the truth.

As IT Leaders, we know you're under siege. 1200 thoughtless clients. Technology that changes every 18 months or so and impacts all you've painstakingly built. New products you need evaluated immediately.

Changes in corporate strategy that could impact your entire department.

One thing you can count on. Computerworld. In our pages you get solid reporting, incisive industry trends, timely news, unfettered editorial, unbiased reporting. We know you need that information to evaluate new products. To get a candid view of emerging technologies. To find out the inside story on corporate strategies. To decide whether to jump ship or stay in your current job. To get

the edge on your competitors.

Get the kind of straightforward, impartial reporting you can count on. Because we never forget what we're talking on.

Order today and you'll receive \$1 information-packed issues of Computerworld.

Call us at 1-800-243-6474 or visit us on the world wide web at [www.computerworld.com](http://www.computerworld.com). To order by mail, see the postage-paid subscription card bound into this issue.

**COMPUTERWORLD**  
A Division of FORTRESS MEDIA GROUP

Introducing a new breed of **UNIX** servers for a new way of computing.



## Optimized for Internet Computing

Internet computing. It's about using the tools of the Internet to revolutionize the way your enterprise does business. But it takes a supremely robust server operating system to make Internet computing a reality. UNIX® technology has always been the power behind the Internet. Now we've Internet optimized the world's most popular Intel®-processor-based UNIX servers for business computing.

Leveraging the scalability, reliability, and interoperability critical for building the bulletproof Internet, intranet, and extranet solutions that can propel your enterprise into the next millennium. Prove it to yourself. For your **FREE\*** copy of SCO® OpenServer™ or SCO UnixWare® systems, check out our website today. Or call 1-888-SCO-UNIX, Dept. 725.

[www.sco.com/servers](http://www.sco.com/servers)

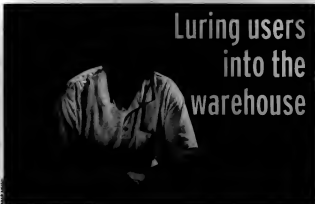
# SCO UNIX Servers

SCO, The Santa Cruz Operation, the SCO logo, SCO OpenServer, and the OpenServer for Internet Computing are trademarks or registered trademarks of The Santa Cruz Operation, Inc. in the U.S. and other countries. IBM is a registered trademark of The Open Group in the U.S. and other countries. All other brand and product names are of their respective owners and are used to identify products or services of their respective owners. The Santa Cruz Operation, Inc. reserves the right to change or modify any of the product or service specifications or features without notice. The product names in the advertisement are for information only. SCO makes no express or implied warranties in this summary. ©1997 The Santa Cruz Operation, Inc. All Rights Reserved. This may affect the time of change. It is the user's responsibility to use the SCO products in accordance with the terms and conditions specified in the license agreements and software license agreements. Use of this software is subject to additional and non-commercial purposes. The license to use the software is the license that is a charge for the license fee of applicability and copying and handling. \*FREE, optional licensed SCO OpenServer license is coming soon. SCO is not responsible for availability.

## Software

Client/Server • Development • Operating Systems

## Briefs



### Luring users into the warehouse

► Gathering their requirements is key

By Craig Stedman

GIVING BUSINESS USERS a say in the design process has become a key tenet of data warehousing. But sometimes it is easier said than done.

Many early warehousing projects were hatched entirely within information systems departments, but that is now considered a recipe for disaster. A lack of up-front input from end users could result in a data warehouse that doesn't meet business needs.

But several factors can make it tough to secure user involvement, warehousing managers

*data warehouses, page 49*

#### APP DEVELOPMENT

### Year 2000 fix can be a problem

By Sharon Gaudin

IMAGINE: A team of developers spends months testing, tinkering and searching for the year 2000 double-digit nightmares hidden in millions of lines of code. Finally, the workers wrap up the last code change and call it a night — only to find that a third of all their transactions now can't be processed correctly.

The team created a bigger

problem than it fixed. Analysts and users said that is becoming common in the developer world.

The only thing giving application developers and chief information officers more sleepless nights than the year 2000 problem, looming larger with every turn of the calendar, is the process to correct it.

Many legacy applications were built using a double-digit field for the date, so 1997 would read simply as 97. When those dates change to 00 for the year 2000, computers around the world could read them as 1900 and cause system havoc.

Many users are finding that the challenge of fixing year 2000 problems lies in changing what is sometimes 25 years' worth of code — without making a mistake that could foul up

*Year 2000, page 49*

### Online software buying drops a few hurdles

By Lisa Picarile

TESTDRIVE CORP. is beefing up its electronic software distribution application to address users' concerns about potential system and hardware conflicts when downloading software purchased online.

Although the application, called TestDrive/Internet, is sold to independent software vendors, and electronic merchants, users will ultimately benefit from the "wrapper" technology that handles the se-

*Online software buying, page 49*

Users could be more willing to buy software online if provided with:

- A simple interface
- The ability to try software before buying
- Quick downloads
- License management
- The confidence that the software is genuine and not a counterfeit
- Secure transactions

Are you the  
e...erprising  
type?

Computerworld 26  
June 17/24, 1997



# Software

Client/Server • Development • Operating Systems

## Briefs

### Aimtech Java tool

Aimtech Corp., a Nashua, N.H.-based manufacturer of Internet and multimedia authoring software, has announced Version 2.0 of its Java authoring tool, Jamba 2.0 was designed to simplify the process of adding animation, sound and interactive navigation to World Wide Web pages. It costs \$349 and will be unveiled June 17 at PC Expo '97 in New York.

### Oracle apps for NT

Oracle Corp. in Redwood Shores, Calif. is shipping its application package for Windows NT. It is the first step toward Oracle's forthcoming support of its clustering technology for NT with its Oracle Parallel Server and Oracle Fall 1997 products. These products were designed to allow use of a single application system by multiple NT servers.

### IBM pitches for switch

IBM has launched an effort to get Sysbase, Inc. and Informix Software, Inc. database users to switch to its DB2 software. The program includes special deals on consulting and use of a third-party conversion kit. IBM isn't offering formal training credits to Sysbase and Informix users but will provide "some amount of incentives on an account-by-account basis," said Tom Kandra, vice president of data management marketing at IBM.



## Luring users into the warehouse

### ► Gathering their requirements is key

By Craig Stedman

GIVING BUSINESS USERS a say in the design process has become a key tenet of data warehousing. But sometimes it is easier said than done.

Many early warehousing projects were hatched entirely within information systems departments, but that is now considered a recipe for disaster. A lack of up-front input from end users could result in a data warehouse that doesn't meet business needs.

But several factors can make it tough to secure user involvement, warehousing managers

Data warehouses, page 49

### APP DEVELOPMENT

## Year 2000 fix can be a problem

By Sharon Gaudin

IMAGINE A team of developers spends months testing, tinkering and searching for the year 2000 double-digit nightmares hidden in millions of lines of code. Finally, the workers wrap up the last code change and call it a night — only to find that a third of all their transactions now can't be processed correctly.

The team created a bigger

problem than it fixed. Analysts and users said that is becoming common in the developer world.

The only thing giving application developers and chief information officers more sleepless nights than the year 2000 problem, looming larger with every turn of the calendar, is the process to correct it.

Many legacy applications were built using a double-digit field for the date, so 1997 would read simply as 97. When those dates change to 00 for the year 2000, computers around the world could read them as 1900 and cause system havoc.

Many users are finding that the challenge of fixing year 2000 problems lies in changing what is sometimes 25 years' worth of code — without making a mistake that could foul up

Year 2000, page 49

## Online software buying drops a few hurdles

By Lisa Picarile

TESTDRIVE CORP. is beefing up its electronic software distribution application to address users' concerns about potential system and hardware conflicts when downloading software purchased online.

Although the application, called TestDrive/Internet, is sold to independent software vendors and electronic merchants, users will ultimately benefit from the "wrapper" technology that handles the se-

Online software buying, page 49

Users would be more willing to buy software online if provided with:

- A simple interface
- The ability to try software before buying
- Quick downloads
- License management
- The ability to reinstall software easily if there are hardware problems
- Secure transactions

## Are you the surprising type?

PC Expo booth 2652  
June 2-19, 1997.

When information is everything

## THE COMPUTERWORLD GLOBAL INNOVATORS SERIES

In our Global Innovators Series, Computerworld explores the technology/business challenges and issues involved in going global.

We uncover how the brightest companies are meeting those challenges and developing a global vision that also serves specific needs of local markets.

# How to gear up for the job of worldwide support

Published in the following issues of  
*Computerworld*:

June 9  
September 8  
December 8



Coming in the  
June 9th issue of  
Global Innovators

### Cover Story: The Support Burden

Whether providing it or receiving it, global customer support is a huge challenge. We explore both sides of the issue:

- Who carries whom?  
How Zeneca Ltd., FedEx and others ensure worldwide software support.
- Anytime, anywhere - Supporting customers in dozens of locations.  
ABB Asea Brown Boveri and Hewlett-Packard implement global support systems.

### World View: Knitting a Global Network

How apparel giant Liz Claiborne links U.S. designers with mills in Hong Kong.

**COMPUTERWORLD**  
The Newsweekly for Information Technology Leaders

**IBM**  
Advertising Sponsor

# THE YEAR 2000

SOLUTIONS SERIES 

Fighting the uphill battle

with an arsenal of tools



Send Us Your  
Toughest Program And  
We'll Analyze It For FREE!

## Take The CA Year 2000 Challenge Before It's Too Late.

**Send Us Your Toughest Program And We'll Analyze It For FREE!**

This special offer can be the first step you take to prepare for the biggest challenge of your career.

At Computer Associates, we've leveraged over two decades of experience in building tools for application development, maintenance and migration to create a solution for your Year 2000 problems. CA Discovery 2000 provides the

**CA 2000**  
TAKE THE CHALLENGE

only end-to-end solution for all aspects of your compliance effort, including analysis, conversion, testing and life-cycle management. And, because our impact assessment tool runs under MVS, VSE and Windows and can access all of the most popular source library formats, you can start your Year 2000 initiative today.

Behind our CA Discovery 2000 solution stands a Professional Services

team that is experienced in all aspects of Year 2000 compliance. After all, as the world's leading independent software company, we have more experience reengineering legacy apps than anybody. And with a 25-year track record of success and nearly \$4 billion in revenue, our clients know we'll be around long after the Year 2000.

Preparing your applications for the next century may be the most important job you've ever faced. Start now and turn the biggest challenge of your career into a triumph.

**Call us today toll-free  
at 1-800-4-2000YR  
or visit [www.ca.com](http://www.ca.com)**

Defining  
Product  
Year

**COMPUTER<sup>®</sup>  
ASSOCIATES**  
Software superior by design.

## Introduction

This is Part 2 of a 2-part Solutions Series on the Year 2000.



## DEADLINES CAN BE KILLERS

**T**ruth be told, I can't always identify with the problems of the IT managers I write about. A rough transition to client/server won't make me lose any sleep. And even though I have enough information in my home to justify deploying a data warehouse, but middleware and metadata don't mean that much to me. But when it comes to this Year 2000 mess, that I can relate to.

For years, I had one of Jeff MacNelly's cartoons from his series "Shoe" above my desk. In it, a frumpled Cosmo Fishhawk sits at his typewriter, trying hard to pound out a story. Shoe, the cigar-smoking editor, is anxiously eyeing his wristwatch while standing over Fishhawk, pointing a pistol at his head. And in the thought bubble above the frazzled Fishhawk are the words: "No wonder they call it a DEADLINE."

The editor side of me — the one that dealt with writers whose idea of handling deadlines was to come up with excuses rather than stories — thought it hilarious. As for the writer side of me, well, that side was a little more sympathetic to Fishhawk's predicament. Deadlines can be stone-cold killers.

Everyone has deadlines. Daily ones, weekly ones, monthly ones. But when you think of deadlines, you think of reporters, because compared to most folks, reporters have deadlines more often — as in all the time often — but in a way, that's good. At least we get insured to them, so they don't face us.

After a while, you learn something else about deadlines. They just keep coming. You make one, and another comes along. There's something Sisyphusian about them.

You remember Sisyphus. For ticking some immortal off big-time, he was condemned to spend eternity in Hades pushing a boulder up a hill, only to see it roll down again. That's where our cover idea came from.

The good news for IT managers is that the analogy isn't perfect: Once they get that "double-zero" up the hill and get through their Year 2000 conversion efforts, they're not gonna have to do another one. They're safe

(depending who you talk to) at least til 2070 and maybe even the year 9,999.

The bad news is that in the meantime, this double-zero is causing a Hades of a lot of havoc. At a time when IT managers are overworked and laboring under budget cuts, they have to check every one of their organization's hardware and software systems for Year 2000 compliance, and each line of legacy code to see if it either contains a date or is dependent on a date that comes from elsewhere.

And they have to get it done soon, to make sure that everything is ready to function when the century rolls over on December 31, 1999.

Now THAT'S a deadline. When it comes to Year 2000, there're no alibis. No reprieves. Simply put, this is one deadline that's absolutely unmovable.

It's not like other deadlines we dread. Got a public speaking engagement? You can always feign laryngitis when it's your turn at the dais. Trip to the dentist? Rub in some Anbesol and push it back a week. April 15th? File the proper late form and pay a little penalty.

But for Year 2000, there's only one thing to do: Get working on the conversion.

In Part 1 of this Solutions Series, we discussed how to get your organization moving on the problem. Part 2 focuses on tools, and the message here is that even the best Year 2000 plan will fail unless the automated tools to implement it are chosen carefully. And the nearer the deadline, the less you'll be able to properly evaluate them.

Speaking of nearing the deadline, I just read about a wristwatch that not only tells regular time but also counts down the hours, minutes and seconds digitally to the year 2000. In its press release, the vendor claims the watch "is ideal for technologists involved in developing systems to meet the new millennium." I say it's ideal for IT managers who want coronaries. Deadlines are bad enough. A constant reminder of how close they are only makes them worse.

Take my word for it.

*Peter Becker is managing editor of Computerworld Custom Publications.*

Even though you're responsible for your organization's Year 2000 efforts, you're not worried. You've got a game plan.

But even the best Year 2000 plan will fail unless the tools to implement it are carefully chosen. These tools can help you check and change code rapidly, but to transform existing software solutions into Year 2000-proof systems, you may need an entire arsenal of them.

Having the right tools is critical because the Year 2000 problem is a

table solution, users have to go with tools that automate every part of the conversion process. Choosing the right tool for each step in the date conversion process will not only speed up the testing and modification of applications but will also reduce costs... perhaps significantly.

At the outset of this supplement, Aberdeen would like to offer nine tips for selecting tools to help them in achieve Year 2000 compliance.

1) Choose tools that support the largest number of languages and platforms. This way, developers will be able to transfer the knowledge gained from one environment to another. The more automated the tools, the faster the project can move.

Year 2000 guru Peter de Jager estimates that tools should be able to automate up to 30% of the conversion process.

2) Since most conversion tools are priced according to hardware capacity, it is economical to move as much of the conversion effort as possible to the PC, where processing power is less expensive and productivity can be boosted through the use of GUI products. It will also alleviate some of the burden on production systems that are already near capacity.

3) Choose tools (and date conversion methods as well) that impact the least amount of code and data. This will reduce not only execution time for the conversion itself but also the testing time needed to verify that the conversion was successful.

4) Be wary of tool or service providers that sell closed loop systems or "specialty" solutions. You don't want to get trapped into using proprietary software options or get locked into using a consultant who is the only one knowledgeable about

by Peter Weather  
by William Moser  
Research Group

## Battling the Year 2000 Problem with an Arsenal of Automated Tools

Even the best Year 2000 plan will fail unless the tools to implement it are carefully chosen.

tough one: It is large, hard to detect, time-consuming, pervasive and expensive... and it has an unmovable deadline. Every business must check all its hardware and software systems for Year 2000 compliance. Every business also has some code that must be made Year 2000-safe. Each line of legacy code must be checked to determine if it either contains a date or is dependent on a date that comes from elsewhere.

### Measuring the problem

How vast is the problem? Say an enterprise has 500 million lines of code and eight programmers, and that each programmer can check two lines of code per minute. Factoring in that some code could be scanned, it will still take 12.5 work years for all eight programmers to check every line of code and be certain that every enterprise application is Year 2000-proof. It will also cost about \$1 per line of code, or nearly \$500 million.

Since this is obviously not a work-

I have to  
reach my  
**Year 2000**  
deadline.

But how?

## Ardes 2k is the only proven millennium solution.

The deadlines for Year 2000 compliance cannot be missed. This innovative product gives your technology specialists the knowledge and resources they need to understand, and fix, your millennium problems.



Ardes 2k was developed as the successful result of Data Dimensions' 5 years of practical experience with creating solutions for the millennium problem. It integrates proven strategies, processes, and tools based on experience evaluating and updating over 3 billion lines of code for hundreds of organizations, including over 30 Fortune 500 companies. It allows your organization to develop trained millennium experts quickly and easily, with quality support from a worldwide leader.

### Customizable, Scalable, Tools-Neutral Technology

Ardes 2k incorporates a tools-neutral process bound only by the best automation software available. The key is a unique Modular Repeatable Process (MRP) that can be customized for individual environments, dynamically scaled to any size organization, and configured to measure any quantifiable results. As a result, your cost and training time is effectively minimized, while your enterprise's productivity and efficiency is significantly increased.

### Innovative Automated Technology Transfer

Data Dimensions' unique technological process lets you easily transfer Ardes 2k knowledge to your information systems personnel and effectively implement solutions. By utilizing CD-ROM and Internet technology, Ardes 2k Year 2000 solutions are now available to a worldwide client base.

### Comprehensive Enterprise-Wide Solutions

Ardes 2k is the most comprehensive millennium update package available. The easy-to-use format provides technical information that can be optimized for your enterprise environment via CD-ROM, Internet Web site access, complementary support tools, products and services.

### Get Started Now

Ardes 2k is the only proven solution that can help your organization meet the complex challenge of 21st century compliance.

For more information, or to order Ardes 2k, call Data Dimensions at 800-499-1973, or visit our Web site at <http://www.data-dimensions.com>



**Ardes 2k**

A PRODUCT OF  
DATA DIMENSIONS, INC.

2000 Capital Tower • 10000 K.E. 4th Street  
Bellevue, Washington 98004

the conversion process and what it's done to the application code. Either of these pitfalls will result in maintenance nightmares over the long haul.

5) You may want to choose tools that

about conversion plans and needs.

9) Don't forget to test hardware and client/server systems for Year 2000 compliance. Many PCs will not roll over.

**Even if an organization is satisfied that it is Year 2000-compliant, there is no guarantee that its partners are.**

have longer-term value to the organization than just for the Year 2000 conversion. Repositories and version control systems are two date conversion tools that also provide value-add beyond December 31, 1999. (Both are discussed in more detail on pp. 10-12.)

6) Convert all applications that exchange data with one another at the same time, using the same technique. This can eliminate not only redundant testing but also the bugs that may be introduced through the use of different date conversion routines. Where appropriate, developers should use pre-packaged date routines and bridging options to reduce programming time.

7) Most organizations underestimate the need for project management expertise, testing time/resources and the need to line help up as soon as possible. Remember: The best laid plans of mice and men often go astray. Have a contingency plan in place on January 1, 2000 — just in case things don't pan out. And it's not a bad idea to have a contract with a service provider to deliver emergency support in the new century.

8) Even if an organization is satisfied that it is Year 2000-compliant, there's no guarantee its partners are. You should gird against external corruption from non-compliant data exchanges or non-compatible date formats. There is no foolproof solution for working with partners except to communicate loud and clear — and often —

#### Where to apply the tools

The typical IT organization has five tasks in the Year 2000 process: inventory, impact assessment (prioritizing, planning and budgeting), conversion, testing and implementation. Each of these tasks can be aided by tools, but particularly conversion.

#### STEP 1: Inventory assessment

Inventory tools take stock of everything in the IT software portfolio, from assembler routines to in-house and packaged applications. These tools — most of which are relatively easy to use — should deliver a first stab at understanding the amount of code that must be processed. Inventory information can be used for a rough budget, as well as time and resource estimates.

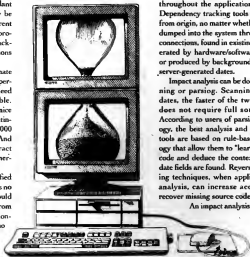
#### STEP 2: Impact analysis

This is a critical step in Year 2000 conversions, for in this phase IT grasps the full impact of the required effort; establishes a completion date based on more than wishful thinking; and lays out the probable and possible consequences of the effort. It is also here that IT can decide on the best conversion techniques to use.

Analysis and assessment tools trace the impact of dates on code and data throughout the application portfolio. Dependency tracking tools track dates from origin, no matter whether they are dumped into the system through online connections, found in existing data, generated by hardware/software systems, or produced by background tasks with server-generated dates.

Impact analysis can be done via scanning or parsing. Scanning code for dates, the faster of the two methods, does not require full source code. According to users of parsing technology, the best analysis and assessment tools are based on rule-based technology that allow them to "learn" from the code and deduce the context in which date fields are found. Reverse engineering techniques, when applied to code analysis, can increase accuracy and recover missing source code.

An impact analysis tool should



**MAKING THE TRANSITION IS EASY  
IF YOU'RE OUTFITTED RIGHT.**

**MS MILLENNIUM**

## Types of Tools Found in Each Stage of the Process

be able to analyze all types of applications and point out unused or redundant code and missing code segments. It should allow developers to change analysis criteria to hone in on specific problems or to customize the tool to find problems unique to an application. The impact analysis should result in a detailed report that can be used as the basis for upper management buy-in, real budgeting, choosing a conversion technique, and pivot dates, and as a decision support document for future project steps and tool purchases. It is here that risk assessment is begun.

### STEP 3: Conversion

The five categories of conversion schemes are discussed briefly here, and in greater detail on p. 22.

The date expansion approach expands the two-digit date field to four digits in order to store the year as 1997 or 2000, rather than 97 or 00.

The date compression approach squeezes a four-digit date into the two-digit space originally allotted to the year.

In the approach known as windowing (fixed or sliding windows), a developer selects a 100-year range via a pivot point by which all dates are calculated and continues to store dates in two digits. The pivot date can be immovable or may move forward every year. Many OS suppliers use this technique.

In encapsulation, a routine subtracts 28 years from the date in order to store it in the database, then adds 28 years to the date for result delivery.

The bridging conversion technique stores code in the applications. The code calls an outside date routine, which translates the date for use by other applications.

### STEP 4: Testing

IT management should allow 12 to 18 months for testing applications during conversion. This implies that Year 2000 conversion is completed in 1998! Testing is essential to the conversion

process, because it provides some assurance that code is compliant and culls out software glitches that may have been introduced through conversion.

Although testing may take up the largest percentage of time (40% to 60%) of the conversion effort, it is also a good place to automate and therefore reduce costs. Unfortunately, not enough testing is being done in the Year 2000 conversion process. Minimal testing will miss working bugs that do not crash the systems but can nevertheless corrupt data.

A testing plan should be laid out as early as possible, since it may be necessary to budget additional hardware for conversion and testing. Big Six consulting firms are allowing customers who do not have the necessary bandwidth or capacity to come in and run Year 2000 testing scenarios. Warning: Aberdeen expects used hardware prices to spike upwards soon, as demand outpaces the normal supply.

Plan to do continuous testing during conversion to make sure that programs are being converted correctly. IT should have a tool for unit or function level testing to ensure code works correctly; sys-




## COMPUTERWORLD Custom Publications

This Solutions Series on the Year 2000 was created by Computerworld Custom Publications. Reprints of this insert and Part I, which appeared in the March 29 issue of Computerworld and dealt with the organizational issues of the Year 2000 crisis, can be ordered through Heidi Broadley at (508) 820-8536 or [heidi\\_broadley@cw.com](mailto:heidi_broadley@cw.com).

The authors of the first story in this supplement can be reached at (617) 723-7890 or at their respective E-mail addresses: [kastner@aberdenn.com](mailto:kastner@aberdenn.com) or [moser@aberdenn.com](mailto:moser@aberdenn.com).

Questions or comments on the second story should be forwarded to managing editor Peter Bochner at (506) 620-8299 or [peter.bochner@cw.com](mailto:peter.bochner@cw.com).



Go ahead. Compare Year 2000 solutions. You'll find out one company exceeds all others in power, performance and flexibility.

Peritus. We are the proven standard in Year 2000 conversion solutions.

Only Peritus offers a full suite of alternatives to fit your specific Year 2000 requirements, from data expansion to logic correction. So whether your system is mission critical or at the end of its life cycle, you can choose a solution that's tailored to your specific needs. Maybe that's why more leading companies and top service providers around the world are currently using Peritus as their Year 2000 partner.

There's something else you get from Peritus—peace of mind from partnering with the world's leader in creatively managing the installed software base. Our Year 2000 solutions are just part of the value Peritus can bring to your company. And we're revolutionizing the way people think about software. Don't be envious. Be smart. Call Peritus today at 1-800-998-7787 for more information, or visit us at [www.peritus.com](http://www.peritus.com).

**Peritus**

CREATIVE EXCELLENCE IN SOFTWARE EVOLUTION



tems testing to ensure the integration of applications and to make sure that the system works as a whole; and concurrency testing to ensure that the application will support the requisite number of users and processes after conversion. The focus of Year 2000 testing is checking existing applications to see the before-and-after effects of conversion. Called regression testing, this accounts for the bulk of Year 2000 testing. This is followed by performance testing.

A new level of testing unique to Year 2000 efforts is the need to simulate the actual process of the clock change from 1999 to 2000 to prove that the conversion is not only successful with today's data but will also run when the clock rolls over. It is also important to test conversions forward in time, addressing issues such as seven-year planning and leap years. Clock rollover testing can only be performed once Year 2000-safe operating systems, middleware and applications have been installed.

#### STEP 5: Implementation

In this phase, application versions are reconciled so that the newest upgrades and enhancements are ready to run. Then the new systems are brought online. Here further testing and fine tuning take place

to ensure that everything is working well together and that application performance is acceptable.

#### More tools to the rescue

Other tools can help IT during the conversion process and beyond. These include repositories, version management software, code preparation tools and project management tools.

A data repository is the easiest Year 2000 tool to cost justify, based on its long-term value to the organization. Once the conversion process is over, the repository will continue to serve not only as a record of all that took place during the conversion effort, but also as a valuable maintenance and business process informational tool.

The repository serves as a storage mechanism for all Year 2000 information regarding where used, dependency tracking, business process reorganization information imported from another tool, and instances of data correction. Used in the testing cycle, a repository will store all metrics regarding an application's performance testing and all tests created. As an historical record of everything that was done for Year 2000 compliance, it can be used to assure outside auditors of an organization's level of liability and thoroughness of conversion, especially when applying for

liability coverage. From the repository, IT can generate application inventory information, print impact analysis reports, and recall every decision and conversion that was made.

Using a repository may be overkill for simple Year 2000 conversions. Also, it may not make sense if most of the applications are not of long-term strategic value and the company has decided to do the bare minimum to ensure compliance and buy enough time to replace the system.



Repositories are also not of much use unless they are planned as an integral part of the conversion process and have a development team committed to keeping everything centrally located. Without a strong commitment and project leader, there will be gaps in the repository's knowledge and it will lose a great deal of its value.

A repository is a good choice for an organization that wants to provide detailed documentation of Year 2000 efforts and whose applications are of long-term value. It is helpful where maintenance costs are rising and organizations are looking for ways to reduce cost after the date change. It



When you're shelling out \$4,000,000  
to ring in the Year 2000, remember:

## SAS<sup>®</sup> software didn't drop the ball.

While other software companies scramble to help you adapt your programs to handle the Year 2000 crisis, SAS Institute has just one question: What crisis? Every SAS software solution—from data warehousing to data mining, OLAP to applied analysis—is ready to handle dates through the year 10,000 AD. So our software customers won't need to shell out the estimated \$3-\$4 million it will cost the average company to address the Year 2000 issue.

Isn't it time you invested in the world's best decision support solutions? From a vendor that will keep you on the leading edge of technology into the new millennium—and beyond? Just visit us at [www.sas.com/y2k/](http://www.sas.com/y2k/) or give us a call at 919-677-8200.



**SAS Institute Inc.**

**The Business of Better Decision Making**

is also a way to get some return on investment from a date conversion effort that is a necessary evil.

#### Version management software

During the process of date conversion, IT will be maintaining multiple versions of each application portfolio being upgraded. At some point prior to January 1, 2000, these versions must be merged into one corrected system. Version control software does this.

The bottom line is that version management should guarantee the integration of Year 2000 fixes with code already running in its non-compliant state. This must be done sooner or later and to

## Tools that Facilitate the Conversion Process

TOOL	USE

make the project, along with practical experience gained in the field.

However, keep in mind that Year 2000 conversion is not part of the standard maintenance contract with any consulting organization unless specifically stated in the agreement. Also, the Big Six consulting organizations can be rather expensive and many are already refusing to take on new projects or new clients at this time.

Another outsourcing option is to ship code to an offshore service provider that can perform standard conversion and possibly testing at a much less expensive rate than many major consulting firms. Another benefit of offshore conversion is that it is conducive to a 24-hour schedule. Code conversion takes place overnight and new code is ready for download and testing by the client during the next day.

Outsourcing can also encompass a new breed of solution provider: the fac-

**Version management software doesn't lose its appeal once data conversion ends; like a carpenter's hammer, it's a good basic tool for many situations.**

automate this process will save a great deal of precious time. Once the date conversion is over, version management software does not lose its appeal; it is like the carpenter's hammer in that it is a good basic tool for many situations.

Rather than purchasing new version management software, most IT groups will just continue to use a solution already in-house. However, few organizations have ever attempted a development effort of this size and scope. For the inexperienced, choosing robust version management software will be an important first step in keeping conversion efforts focused and structured.

If developers have not been consistently using a version management tool or are unfamiliar with a particular vendor's solution or a new version, some training and ramp-up time will be needed. Version control can constrain the development process that developers must abide by in order to make the con-

version approach may be enough.

#### Outsourcing

Strictly speaking, outsourcing Year 2000 date conversion is not a tool, yet it can significantly speed up the effort. Many companies are outsourcing as much of their conversion as possible in order to get it all done in time or to have more time for planning and addressing special cases that will crop up during the project. Outsourcing part or all of the conversion project will leave more room in the process to test applications thoroughly at the project's end.

Outsourcing can take several different forms. Service providers are a one-stop shop and can take all or much of the conversion burden away from the corporate developer. Any large consulting firm has been working on Year 2000 conversion for quite a while now and should bring a good deal of project management and programming expertise to

tory supplier. Such vendors operate a software date conversion factory, usually based on some patent-pending technology and heuristics engine, that automatically processes code at a fast rate and spits it out the other end as Year 2000-compliant. The finished applications are sent back to IT for testing. The more code processed, the "smarter" the factory becomes.

There are pros and cons to outsourcing. Unless IT has a very large budget and significant clout with major service providers, Big Six outsourcing is only a good option for those that have more money than time and/or programming expertise. Offshore and factory conversion options are more cost effective, but do not necessarily lessen the IT burden, except as a way to convert the largest amount of code in the shortest available time. This is an option for organizations that prefer to keep certain critical systems in-house, but have a lot of less critical systems that need to be Year 2000-compliant and that make sense to ship to a factory or offshore facility.

Outsourcing is an option where there is a great deal of code to be converted, where doubling up on conversion is the only way to gain time to make all the changes necessary to weather the century-date rollover, and where there is money to be invested in the process.

#### Project management

Several new project management tools specifically support Year 2000 conversion projects, even providing a road map and project templates for managing them. It is well worth the investment in time and money to evaluate these tools; lack of planning and management can substantially impact IT's conversion efforts.



The benefits that can be reaped from project management tools certainly apply to Year 2000 efforts. However, those tools will not make up for any lack of knowledge or effort on the part of the developer or management team. Year

organization's particular needs is a valuable jump-start.

#### Side benefits

Organizations can realize numerous side benefits in the course of their Year 2000 conversion process. IT should gain a thorough knowledge of which applications it has and where to add functionality to legacy applications. During the conversion process, developers can eliminate redundant and unused code, resulting in smaller, possibly better performing applications. The inventory and impact analysis will be useful for future maintenance, as will the documentation of applications and processes that are a byproduct of sophisticated Year 2000 efforts. IT can identify points of weakness and failure in applications, which can then be corrected. Management can understand the business costs of bad technology and coding choices. All in all, Year 2000 will provide IT with a road map of future development efforts and will give the organization impetus for ongoing change. ☐

*This article was written by Peter S. Kastner and Karen D. Moser of Aberdeen Group Inc., a market research and consulting firm in Boston.*

*As Group Vice President of Aberdeen, and general manager of its commercial systems practice, Peter Kastner analyzes trends in databases, OLTP, decision support, client/server architectures and distributed commercial systems development. He also conducts studies in distributed systems planning, electronic commerce and database management issues for suppliers and user organizations.*

*Karen Moser is Director of Application Tools Technology for Aberdeen. Her practice includes helping organizations choose application development, maintenance and production monitoring software tools, and in developing change strategies for technology transitions such as client-based client/server.*



2000 project managers, like mainframe programmers, are worth their weight in gold. But even though aggressive project management leaders will be needed to keep a large project on schedule and within budget, having a tool that defines the project direction, gives tips for execution, and can be customized to an

# The Replacement Tool

By John R. Logan, President, Aberdeen Group, Inc.

One of the most powerful Year 2000 tools is what we call the Replacement Tool — the use of packaged software to replace business-critical applications infected with the Y2K virus. As time draws IS executives closer to the Unmovable Deadline, many more enterprises will deploy the Replacement Tool. Why? Because most repair projects will not meet their initial objectives.

If history is any indication, 80% of mainframe application repair projects will not be completed by 12/31/99 with the production quality and functionality enterprises require. Once executives realize that their repair projects cannot meet crucial end-of-test deadlines, contingency plans must be initiated. Acceptable plans do not include allowing chaos to become the norm, shutting down the business, or hiring hordes of new workers to create and carry paperwork from one department to another and declaring that the organization has undergone process reengineering.

In addition, many older applications, including those on midrange computers acquired from independent software vendors (ISVs), are no longer supported, and will not be upgraded to be Year 2000-safe. It may even be beyond the scope of in-house staffs to repair in time home-grown applications for which enterprises have source code.

Aberdeen believes that every organization involved in Year 2000 repair should be evaluating its ability to implement a replacement action plan — one that includes determining at what date this plan must be activated to ensure operational effectiveness through the century-date rollover.

While running out of time, many IS executives believe that the replacement approach will take too long. They've heard about 18-36 month periods to implement state-of-the-science, enterprise-wide, integrated process, client/server applications. But these implementation times include a

large amount of process redesign. Enterprises that straightforwardly implement their current processes in Year 2000-safe client/server applications report deployment times as short as 60 days. The point is this: Today's comprehensive client/server applications already have the functionality to replicate most enterprises' key processes. Enterprise-unique processes can be quickly added through program extensions.

As most enterprise-class client/server applications are now targeted to run on UNIX systems and departmental-class applications on Microsoft NT Server, enterprises that select the Replacement Tool should select partners that can comprehensively deliver and support both.

A key to replacement success will be the ability to quickly build and manage the appropriate enterprise-wide information infrastructure. This requires skills in open systems networking and very high-end application implementations that many traditional mainframe data centers find are internally in short supply. As a result, while Year 2000 repair projects put a premium on increasingly scarce MVS/Cobol skills, replacement projects are able to use the expertise of the growing army of open systems specialists.

Frankly, the financial side of your enterprise will prefer the Replacement Tool approach. While repair costs must be expensed when incurred, lowering the profit line immediately, new applications and the systems required to run them can be capitalized or leased over several years. This is more palatable to those responsible for financial planning.

The Replacement Tool may soon become the most popular Year 2000 product. Enterprise IS executives fastest to deploy it will have a foundation for advancing their organization's information processing competency beyond 2000 — a big advantage if the competition doggedly follows.



## Time to call HP.

### ONLY 941 DAYS LEFT

For the information technology executives who hear nothing but doom and gloom about the coming of the year 2000, we offer a brighter picture: one that includes an opportunity to re-think, perhaps re-engineer, and most definitely provide your enterprise with more flexibility and power than ever before. Since you need to fix the Year 2000 problem anyway, we suggest you do it using the latest Internet-enabled,

client-server technology that prepares for the future instead of echoing the past. With our Cure2000 program, HP and its world-class partners can help provide everything you need, from Year 2000-ready applications for mission-critical environments to leading-edge application development tools and services. The bottom line: if you haven't contacted us already, it's time to do it now. Capitalise on chaos. Call 1-800-HP-KNOWS or visit [www.hp.com/go/year2000](http://www.hp.com/go/year2000)



HEWLETT  
PACKARD

**A**s the clock ticks toward THE deadline — midnight, December 31, 1999 — automated software tools are becoming the dominant solution for the Year 2000 problem. These tools, which can scope out the magnitude of Year 2000 date change problems and correct them, are being used by third-party outsourcing firms as well as companies who buy the tools to do the conversions themselves.

It is estimated there are 1 trillion

through of the product on one application — just to make sure it works.

Going even further is Frank Driscoll, president of Formal Systems Inc., a Frederick, New Brunswick, provider of software reengineering services. He says that products should carry a warranty that they will locate date fields accurately — with few false alarms and fewer misses — and modify them correctly.

Formal Systems provides a warranty of performance "with less than 1% false negatives and less than 5% false positives," according to Driscoll. A false negative is more harmful than a false positive, because a false negative means an error is not caught. False positives can be reviewed by a programmer and corrected.

In Year 2000 conversions, about 30% of the user's cost and effort is in preparing inventory and identifying date problems, 20% in correcting code and 50% in testing. For most suppliers, the "sweet spot" of the marketplace consists of the time-consuming and tedious processes of performing the system inventory to identify what needs to be changed, and then doing the actual conversion.

An organization's date-change requirements may depend on more than the number of lines of code it has. "It is not necessarily the number of lines of code, but how heavily the application relies on dates," says Theresa O'Neil, vice president of marketing, data warehousing, for Platinum Technology Inc. "The more complex the application, the more you need an automated tool. Tools save front-end time in guessing where date occurrences are."

For the conversion process, there are two main methods of date

## The Path to Year 2000 is a Tool Road

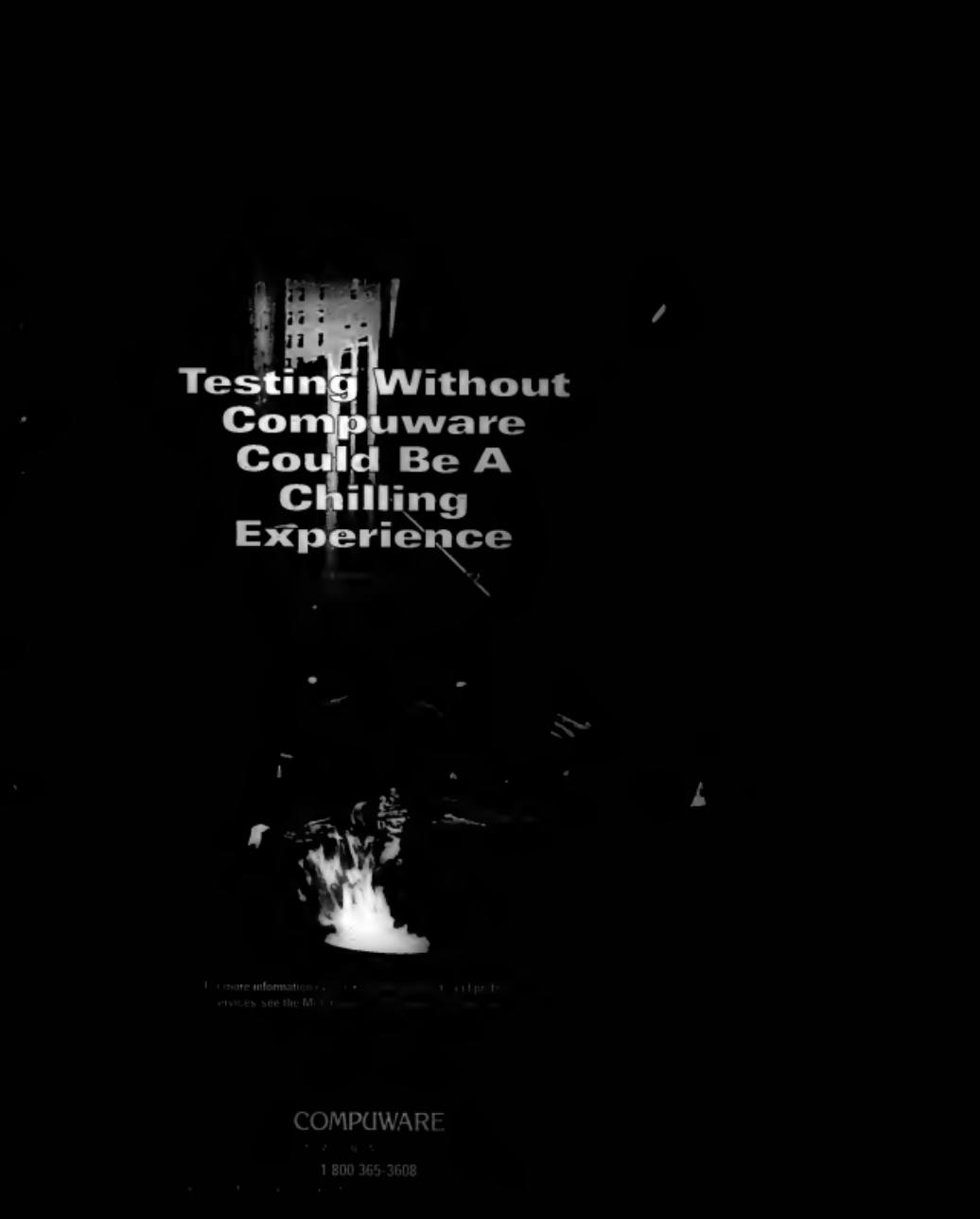
lines of code in corporate systems around the world, with 200 billion lines of Cobol code alone. The most efficient way to perform the tedious and detailed corrections to these lines of code is with software — an opportunity that has not been lost on software suppliers.

"It's like the California gold rush," says Capers Jones, chairman of Software Productivity Research Inc., a consulting firm in Burlington, Mass. He estimates that 300 tools are already available, and 20 to 25 more companies are entering the market every month.

But this rapid proliferation of tools should make users wary. "The newer ... products may not work," warns Jones, adding, "There probably will be a lot of breaches of contract for the Year 2000 in the vendor space."

To avoid getting involved in this kind of litigation, users should choose their tools very carefully, making sure to not only get references from vendors but also to conduct a pilot run-

... getting involved in  
... related breach of  
... litigation on users  
... house their tool  
... carefully



**Testing Without  
Compuware  
Could Be A  
Chilling  
Experience**

For more information on the security and reliability of Compuware products, see the following:

**COMPUWARE**

SECURITY

1 800 365-3608

© 1997 Compuware Corporation

changes: date expansion, which widens all two-digit date fields to four, e.g., 97 to 1997, and windowing (aka interpretation and logic correction), which uses logic to infer the correct century from the existing two-digit year date, i.e., determining that a 50 in the date field most likely means 1950 and not 2050. Date expansion offers a long-term fix; windowing is generally used by firms that started their conversions late and need a cheaper and possibly faster solution. (Conversion methods are discussed in more detail on p. 22.)

A note of caution: Code corrected through data expansion techniques is not compatible with code fixed by windowing. For programs using different correction approaches to talk to each other, a conversion program is needed, notes Ted Swayer, director of marketing at Peritus Software Services, Inc., a Billerica, Mass., supplier of automated tools based on neural network technology. Peritus employs a hybrid approach which allows users to correct their code through date expansion, or windowing, or both techniques.

For many organizations, the decision over which conversion technique to use

is a key component of their strategy for combating the Year 2000 crisis.

For instance, although many applications containing birth dates need date expansion, McCormick & Co., Inc., a



Hunt Valley, Md., maker of spurs, opted for a windowing approach because it wanted to do the conversion for the lowest possible cost.

"To fix something forever doesn't make sense" because the systems will eventually need to be replaced, says John Burns, the company's Year 2000 project manager.

For McCormick, that meant renovating systems wherever possible and

replacing systems only if necessary. "For every \$1 you spend in renovating, it costs \$17 to replace it," notes project director Brent Bolster. "So you fix it as cheaply as you can and then look into more advanced systems."

Why did McCormick finally decide on the windowing approach? The company figured it had 24,000 files with dates. File expansion would have required that all of its programs be tested for source validation. The entire conversion would have cost many millions of dollars.

However, windowing would require that only files using dates in keys are expanded and only programs using dates in calculations are modified. The process of testing would be streamlined, and the standard date routing would make systems compliant until the year 2070. (In 2069, a company will need to change only one routine to make the programs compliant to 2170.) All in all, the cost would be much less.

Since performing an overall inventory assessment and library cleanup in late 1995 and a platform assessment in April 1996, McCormick has completed a pilot project on three of its key applica-

## Taking the High Road on Year 2000 Conversions

Although Cobol programs account for the majority of Year 2000 date changes in business applications, it is certainly not the only language being tackled, nor is it the most difficult one. The latter claim could be made by Natural, a 4GL that is used with Adabas in high-end transaction processing applications.

"Natural application architectures are significantly more difficult than Cobol applications," says Frank Driscoll, president

of Natural Systems, Inc., a 4GL software company. "Natural applications have less than 2,000 modules. This means there are many more opportunities for inter-module interaction of dates in Natural applications. Therefore the analysis task is more complex," says Driscoll.

Natural applications also have many more types of modules than Cobol applications. (Natural has more than 100 Cobol has one.) This means that the analysis task is more complex," says Driscoll.

tions. The company has converted five more systems since the pilot and expects to be fully Year 2000-compliant by the end of 1998.

#### You charge HOW much?

As a result of the Year 2000 crisis, the cost of Cobol programmers has been going up steadily. That's good news if you're a Cobol programmer. But if you're a company that has to hire high-paid Cobol programmers, it's anything but good news. In fact, this cost may become a key factor in your Year 2000 strategy.

The State of Nevada, which has 16 departments and 100 agencies, began working on the Year 2000 problem in 1996, when it became a beta test site for a rules-based automated software service from MatriDigm Corp., a Fremont, Calif., developer of services for the maintenance, migration, modification and testing of applications.

The MatriDigm Advanced Process 2000 Service, an automated date reconstruction system, takes source code (electronically or on tape) and converts it to Year 2000 compliance.

The service works on IBM Cobol

code, automatically extracting and then describing the inputs, outputs, date fields and business rules of an application. The product can process up to 1 million lines of code per hour.

When the state first proposed its conversion plan in September 1996, it called for 7,410 person-days to do the conversion — the biggest chunk of the Year 2000 project — 2,964 person-days for strategic planning and 1,729 person-days for test and integration and implementation. The initial estimate was that 100 new programmers would be needed to make the July 1, 1999 deadline for conversion and testing.

In March, the state contracted with MatriDigm to do all its conversion work. Using the vendor's automated service meant that the state did not have to hire the 100 programmers, nor buy an estimated \$8 million worth of replacement PCs. "Without the new hardware, we had estimated our total cost at close to \$16 million," says Marlene Lockard, director of the state's

department of information services. "By using MatriDigm, we can save 60% of that, or close to \$9.6 million."

#### Insuring savings

If time is money, then American Bankers Insurance Group, an insurance firm based in Miami, also realized significant savings when it opted for an automated Year 2000 tool rather than a manual approach.

The mix of computers and software at American Bankers includes IBM mainframes, Sun workstations, CICS, an Oracle DBMS with ProCobol and AIX applications. The company's Year 2000 project is equally broad: It has worldwide subsidiaries and eight departments all working on Year 2000 projects. Its Year 2000 team has three groups working with similar applications.

A year ago, the insurer started its first Year 2000 application: a collateral tracking system, called Monitor, which ensures that customers have insurance if, for example, they buy a new car. Originally, "we figured it would take us up to 1,500 hours to manually do a full impact analysis on Monitor," said Roman Lavina, applications support

NXL2000 solution on a workbench tool from Reasoning Inc. of Palo Alto. The tool, called the Reasoning5 CBMS, a codebase management system for reengineering and transforming legacy applications not only to Year 2000

compliance but to your own unique and particular date requirements. Reasoning does both at once in the form of the Reasoning5

you increase the number of seeds, you increase the probability of finding date changes. You save time by identifying more bugs now than later."

Most companies use a set of descriptors to find date-sensitive

changes date expansion, which makes all two-digit date fields to four (e.g., '97 to 1997, and windowing (aka interpretation and logic correction), which uses logic to infer the correct century from the existing two-digit year date (i.e., determining that a 50 in the date field most likely means 1950 and not 2050). Date expansion offers a long-term fix; windowing is generally used by firms that started their conversions late and need a cheaper and possibly faster solution (Conversion methods are discussed in more detail on p. 22).

A note of caution: Code corrected through date expansion techniques is not compatible with code fixed by windowing. For programs using different correction approaches to talk to each other, a conversion program is needed, notes Ted Sawyer, director of marketing at Peritus Software Services, Inc., a Billerica, Mass., supplier of automated tools based on neural network technology. Peritus employs a hybrid approach which allows users to correct their code through date expansion, or windowing, or both techniques.

For many organizations, the decision over which conversion technique to use

is a key component of their strategy for conquering the Year 2000 crisis.

For instance, although many applications containing birth dates need date expansion, McCormick & Co., Inc., a



Hunt Valley, Md., makes of spools opted for a windowing approach because it wanted to do the conversion for the lowest possible cost.

To fix something, however, doesn't make sense. "Because the systems will eventually need to be replaced, says John Burns, the company's Year 2000 project manager.

For McCormick, that meant renovating systems wherever possible and

replacing systems only if necessary. "For every \$1 you spend in renovating, it costs \$17 to replace it," notes project director Brent Bodwin. "So you fix it as cheaply as you can and then look into more advanced systems."

Why did McCormick finally decide on the windowing approach? The company figured it had 24,000 files with dates. File expansion would have required that all of its programs be tested for source validation. The entire conversion would have cost many millions of dollars.

However, windowing would require that only files using dates in keys are expanded and only programs using dates in calculations are modified. The process of testing would be streamlined, and the standard date routing would make systems compliant until the year 2070. (In 2069, a company will need to change only one routine to make the programs compliant to 2170.) All in all, the cost would be much less.

Since performing an overall inventory assessment and library cleanup in late 1995 and a platform assessment in April 1996, McCormick has completed a pilot project on three of its key applica-

## Taking the High Road on Year 2000 Conversions

Although Cobol programs account for the majority of Year 2000 date changes in business applications, it is certainly not the only language being tackled, nor is it the most difficult one. The latter claim could be made by Natural, a 4GL that is used with Adabas in high-end transaction processing applications.

"Natural application architectures are significantly more difficult than Cobol applications," says Frank Driscoll, president of Formal Systems Inc., a company in Frederickton, New Brunswick, that develops tools to support the reengineering and maintenance of legacy software. Its NXL2000 product helps customers find and fix Year 2000 defects in Natural source code.

Natural applications typically have large numbers of small modules — the opposite of Cobol applications. For example, one of Driscoll's customers had a 4-million-line Natural appli-

cation with 16,000 modules. A similarly-sized Cobol application would have less than 2,000 modules. "This means there are many more opportunities for inter-module interaction of dates in Natural applications. Therefore the analysis task is more complex," says Driscoll.

Natural applications also have many more types of modules than Cobol applications. (Natural has more than 10; Cobol has one.) This makes the repository data modeling of a Natural application much more complex.

Natural also supports global variables and advanced database structures that are not in typical Cobol applications. These features improve performance, but make it harder to analyze Natural applications for Year 2000 conversions.

To perform a proper analysis of a Natural application requires a comprehensive parsing of source code, using a tool with many context sensitivities. Formal based its

tions. The company has converted its more systems since the pilot and expects to be fully Year 2000-compliant by the end of 1998.

#### You charge HOW much?

As a result of the Year 2000 crisis, the cost of Cobol programmers has been going up steadily. That's good news if you're a Cobol programmer. But if you're a company that has to hire high-paid Cobol programmers, it's anything but good news. In fact, this cost may become a key factor in your Year 2000 strategy.

The State of Nevada, which has 10 departments and 100 agencies, began working on the Year 2000 problem in 1996, when it became a beta test site for a rules-based automated software service from MatriDigm Corp., a Fremont, Calif., developer of services for the maintenance, migration, modification and testing of applications.

The MatriDigm Advanced Process 2000 Service, an automated data reconstruction system, takes source code (electronically or on tape) and converts it to Year 2000 compliance.

The service works on IBM Cobol

code, automatically extracting and then describing the inputs, outputs, date fields and business rules of an application.

The product can process up to 1 million lines of code per hour.

When the state first proposed its conversion plan in September 1996, it called for 7,410 person-days to do the conversion — the biggest chunk of the Year 2000 project — 2,964 person-days for strategy planning and 1,729 person-days for test and integration and implementation. The initial estimate was that 100 new programmers would be needed to make the July 1, 1999 deadline for conversion and testing.

In March, the state contracted with MatriDigm to do all its conversion work. Using the vendor's automated service meant that the state did not have to hire the 100 programmers, nor buy an estimated \$8 million worth of replacement PCs. "Without the new hardware, we had estimated our total cost at close to \$16 million," says Marlene Lockard, director of the state's

department of information services. "By using MatriDigm, we can save 60% of that, or close to \$8 million."

#### Insuring savings

If time is money, then American Bankers Insurance Group, an insurance firm based in Miami, also realized significant savings when it opted for an automated Year 2000 tool rather than a manual approach.

The mix of computers and software at American Bankers includes IBM mainframes, Sun workstations, CICS, an Oracle DBMS with ProCobol and AIX applications. The company's Year 2000 project is equally broad: It has worldwide subsidiaries and eight departments all working on Year 2000 projects. Its Year 2000 team has three groups working with similar applications.

A year ago, the insurer started its first Year 2000 application: a collateral tracking system, called Monitor, which ensures that customers have insurance it, for example, they buy a new car. Originally, "we figured it would take us up to 1,500 hours to manually do a full impact analysis on Monitor," said Roman Lavina, applications support

NXL2000 solution on a workbench tool from Reasoning Inc. of Palo Alto. The tool, called the Reasoning5 CBMS, a codebase management system for reengineering and transforming legacy applications not only to Year 2000

compliance, but to new languages and platforms that support today's corporate IS requirements. [The Reasoning CBMS] "allows us to deal with complex languages" such as Natural, Driscoll said.

Another company that uses advanced techniques to find and fix Year 2000 problems is Peritus Software Services Inc. in Billerica, Mass. Its AutoEnhancer/2000 tool uses neural network technology to identify date-sensitive items.

"Neural net technology produces a list of suspects, or seeds," says Ted Swoyer, director of marketing at Peritus. "If

you increase the number of seeds, you increase the probability of finding date changes. You save time by identifying more bugs now than later."

Most companies use a set of descriptors to find date-sensitive areas. But they don't look at date in the files, so the searches generate a lot of false positives and negatives. "There's a lot of quirky stuff in code, such as programmers who name data after people they've dated," says Swoyer. "So you can't find date information by the usual means. To change a data model, I need to know where all the missing code is." The neural network intuitively recognizes and remembers the naming conventions used in a customer's programs.

The product currently is used on MVS Cobol, but Peritus plans to add support for PL/I in July.

executive at American Bankers.

But faced with that high estimate for how long it would take, the insurance firm started to investigate the possibility of using automated tools. After its evaluation, the company turned to three tools. Two were from Macro Focus, a supplier of tools based in Palo Alto: Resolve 2000 and the Year 2000 Add-On.

The Year 2000 Add-On is an extension to Resolve 2000. Used for analysis and automated data expansion, the graphical tool can capture, review and maintain analysis results online. The product allows developers to identify exceptions to the date, identification results and define the analysis results by specifying changes directly in an add-

### Through its use of tools, American Bankers reduced the time needed for an impact analysis from up to 1,500 hours to 100 hours.

On. The third was C-V-Impact 2000, an impact analysis tool from Computer Associates, Ithaca, N.Y.

The company used Resolve 2000 to assess the size of its century date change project. The product allows programmers to identify all the lines of code that will require changes by tracing a field in one program and moving it to another, so it can be and link related information. The tool parses code into different arrays, and identifies dates so that users can see the source code online, click on a list and create annotations to each line and then generate reports for people working on the project.

on window.

The insurer has a large number of legacy applications, some of which are written in the Easytrieve 4GL. Because the Macro Focus tools could not handle Easytrieve, American Bankers purchased C-V-Impact 2000, an analysis tool that creates reports, identifies affected programs and copybooks for whatever information is needed to begin the conversion to non-digit dates.

By using these three tools, American Bankers was able to perform the impact analysis in a mere 100 hours. Furthermore, it realized a savings of \$64,512 for its Monitor application. Lavina also notes that the Monitor project is now fully Year 2000-compliant, and the rest of the firm's applications should be converted by the end of 1998.

#### Too many burners

One of the dangers of the Year 2000 crisis is that it forces many companies to put other IT projects on the back burner. But some companies can't afford to delay important projects. These companies need to have all the burners on their stoves going, and need someone at the company to keep an eye on everything to make sure nothing catches fire.

At Atlantic Energy, a public utility in Egg Harbor Township, N.J., that person is Chris Arena. Although his busi-

## Surviving The Year 2000 Crisis

Most organizations do not have the tools they need for the millennium update, according to a new book by Year 2000 guru Peter de Jager and Richard Bergen, vice president of technology services for Data Dimensions Inc., a Bellevue, Wash., vendor of Year 2000 services.

The book, entitled *Surviving the Year 2000 Computing Crisis*, recommends that companies perform an inventory of the tools they own and decide how and where they can be used. This will "identify gaps in your toolbox," write the authors. "Whether you should fill those gaps will require some difficult decision making."

For automated tools to be used, a task must be performed the same way every time and it must be done frequently. "Where exceptions to a process are encountered more than 20% of the time, users will abandon the tool," say the authors. "If users do not invoke the tool frequently enough, they may require a reeducation process, which, if it lasts more than 20 minutes, may discourage use and result in rejection of the tool."

How much should you spend on Year 2000 tools? The authors say some mid-sized companies have estimated a need of \$500,000 to \$750,000 to buy tools and services, or 1% to 10% of sales.

Percentage of Year 2000 Repairs Completed Based on Start Year and Use of Manual or Automated Search Procedures





executive at American Bankers.

But faced with that high estimate for how long it would take, the insurance firm started to investigate the possibility of using automated tools. After its evaluation, the company turned to three tools. Two were from Micro Focus, a supplier of tools based in Palo Alto: Revolve/2000 and the Year 2000 Add-

The Year 2000 Add-On is an extension to Revolve/2000. Used for analysis and automated date expansion, the graphical tool can capture, review and maintain analysis results online. The product allows developers to identify exceptions to the date identification results and refine the analysis results by specifying changes directly in an add-

### Through its use of tools, American Bankers reduced the time needed for an impact analysis from up to 1,500 hours to 100 hours.

On. The third was CA-Impact 2000, an impact analysis tool from Computer Associates, Islandia, N.Y.

The company used Revolve/2000 to assess the size of its century data change project. The product allows programmers to identify all the lines of code that will require changes by tracing a field in one program and moving it to another, so it can tie and link related information. The tool parses code into different arrays, and identifies dates so that users can see the source code online, click on a list and create annotations to each line, and then generate reports for people working on the project.

on window.

The insurer has a large number of legacy applications, some of which are written in the Easytrieve 4GL. Because the Micro Focus tools could not handle Easytrieve, American Bankers purchased CA-Impact 2000, an analysis tool that creates reports, identifies affected programs and copybooks for whatever information is needed to begin the conversion to four-digit dates.

By using these three tools, American Bankers was able to perform the impact analysis in a mere 100 hours. Furthermore, it realized a savings of \$64,512 for its Monitor application. Lavina also notes that the Monitor project is now fully Year 2000-compliant, and the rest of the firm's applications should be converted by the end of 1998.

#### Too many burners

One of the dangers of the Year 2000 crisis is that it forces many companies to put other IT projects on the back burner. But some companies can't afford to delay important projects. These companies need to have all the burners on their stoves going, and need someone in the company to keep an eye on everything to make sure nothing catches fire.

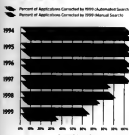
At Atlantic Energy, a public utility in Egg Harbor Township, N.J., that person is Chris Arena. Although his busi-

## Surviving The Year 2000 Crisis

Most organizations do not have the tools they need for the millennium update, according to a new book by Year 2000 guru Peter de Jager and Richard Bergeon, vice president of technology services for Dete Dimensions Inc., e Bellevue, Wash., vendor of Year 2000 services.

The book, entitled *Surviving the Year 2000 Computing Crisis*, recommends that companies perform an inventory of the tools they own and decide how and where they can be used. This will "identify gaps in your toolsets," write the authors. "Whether you should fit those gaps with software, people, or both, is another matter."

Percentage of Year 2000 Repairs Completed Based on Start Year and Use of Manual or Automated Search Procedures



# Puzzled???

## Platform 2000 Provides All the Pieces to Solve Your Millennium Problem.

### RCG IT/QUINTIC — THE DATE COMPLIANCE SOLUTION



*Platform 2000™ is a comprehensive offering that includes methodologies, software, and services. This approach allows RCG IT to provide the most flexible and robust cross-platform date compliance solutions for your IBM mainframe, AS/400 and Tandem environments. RCG IT will license its products and/or provide complete conversion services to piece together a solution tailored to your needs.*

#### PLATFORM 2000™ SERVICES

Platform 2000™ services include complete lifecycle support provided by an experienced, dedicated team of year 2000 professionals. The client may choose any combination of services including Enterprise Inventory and Scoping, Software Data Assessment, Conversion Planning, Transformation/Automated Remediation, Testing, Implementation/Integration, and Migration and Production Support. Platform 2000™ support services also include consultation, custom documentation, project management, facilities management, hotline, and the RCG IT Y2K University. On-site/off-site/off-shore conversion capabilities are available to suit your requirements.

#### PLATFORM 2000™ SOFTWARE

Century Conversion Software addresses COBOL and Assembler in the IBM MVS and VSE mainframe environments, COBOL and RPG on the IBM AS/400 platform, and COBOL and TAL on the Tandem platform. In addition, Century Conversion Software provides a Language Independent Analyzer that locates date usage regardless of program language (e.g. Focus, SAS, C/C++, Easytrieve, etc.). The system is comprised of three products: Century Source Conversion, Century File Conversion, and Quantic Plus with Automated Remediation that may be purchased or leased. In addition, a free 30-day software trial is available upon request.

*Century Static Conversion Software* is an inventory and analysis product that automates the analysis of source code to identify potential date processing problem areas and provides numerous report capabilities that also support general maintenance functions. Primary features include a Dynamic Date Name Dictionary, Extensive Reporting, Inventory and Tracking, a Comprehensive Repository, Complete Panning Capability, and Cost and Budget Estimating.

*Century File Conversion Software* is a file product that automates the conversion of any database or file which can be produced in a sequential format. Extensive features include: Dataset Inventory, Data Analysis, Dataset Usage Reports, Multiple Date Formats, Automatic Date Reformating, Multiple Record Formats, and Data Regression (left-forward) Testing.

#### PLATFORM 2000™ METHODOLOGY

Your company may choose any combination of the following services to address each phase of the date compliance project:

*Enterprise Inventory and Scoping:* The development of a profile that describes technical environments, testing scenarios, and other components involved in the conversion process.

##### Software Data Assessment:

The analysis phase in which automated tools are used to identify date-related issues throughout each information system.

*Conversion Planning:* The budgeting, team building, and identification of upgrade units or groupings of information-system components. Upgrade units then are sequenced in a conversion roadmap, and data bridges are identified.

##### Transformation and Automated Remediation:

Focuses on program renovation and unit testing. Transformation is the process of modifying non-compliant programs through file expansion or windowing. Quantic Plus has Automated Remediation that facilitates the windowing technique using output from the assessment phase, thus reducing program length and manual effort.

*Testing and Integration:* Includes systems, regression and acceptance testing. Century Conversion Software, coupled with RCG's Quality Assurance Methodology, ensures the delivery of validated date compliant systems.

*Migration and Production Support:* The reinstatement of date-compliant systems back into production, supported by strong change-management techniques.

For more information or to locate a regional RCG IT office, please contact:

Corporate Headquarters: RCG Information Technology • 800-333-7816 or 908-744-3500 • 908-744-3501 FAX • [www.rcgit.com](http://www.rcgit.com)  
or RCG IT/Quintic • 800-699-1169 or 847-699-1165 • 847-699-1214 FAX • [www.quintic.com](http://www.quintic.com)

## Options for

# DATE CONVERSION

**C**onversion, a critical portion of Year 2000 solutions, can be broken down into five categories: date expansion, date compression, windowing, encapsulation and bridging.

**Date expansion** is the conversion technique that provides the most value when used on applications that have long-term value to the organization, where performance is important, and where systems must use archived data.

But it is not the best option when developers are trying to beat the clock to get code converted, because: 1) every application and database that has a date must be converted; 2) the amount of code being changed means more chance for error; and 3) every client interface and report must be rewritten to handle the new date format. It's a bad idea to expend the energy needed for date expansion conversion on applications that are not key to daily business. Nor is it viable for where live or archived data should not be changed, such as in highly regulated industries and the government.

Once converted via date expansion, applications and data will run until five digits are needed to express the date. This technique is accurate because there is no dependence on date conversion or bridging routines. By not adding code to an application, the testing effort and maintenance requirements are reduced.

In terms of its upside and downside, date compression is like date expansion. But as a conversion technique, it is slightly less invasive than expansion; because it uses the existing digits allocated for the date within an application, it changes less code. Date compression lends itself to a factory-automated approach that speedily compresses all the dates and stores them in an appropriate format.

Windowing is a good approach for large applications that are not very date dependent and for very cost-conscious organizations.

Caution: there may be side effects to windowing. It may slow performance and, due to the nature of the translation of dates based on a particular pivot date, is only reliable when used on data that spans 100 years or less. For dates and dates spanning 100 years or more, there is a possibility that the dates will not be translated correctly. IT must also be very familiar with the application and its use of dates. Some application screens may have to be rewritten.

As a conversion technique, **encapsulation** is best used with applications that have contact only with each other or a single database and do not exchange data with applications outside the closed loop. It is not a performance-oriented option, especially in data-intensive applications, because of the date translation that must take place. But it's a fast option and one that does not change the application.

With encapsulation, all the data must be aged 28 years, so it is not an option unless all the applications using that database also use encapsulation. It will not

work with data older than the 28-year age date.

**Bridging** is one of the fastest options for Year 2000 compliance. It can be used by itself or with other conversion techniques to address specific problems or to ensure that converted applications can run with non-converted applications simultaneously. It can significantly reduce development and testing efforts and time and it does not require that data be converted right away. It is best used on applications that will be replaced or significantly revamped after the Year 2000 but which cannot be taken care of beforehand, or when finishing conversion is urgent. It's also an option for applications that use data spanning more than 100 years or that project data into the future.

Bridging tends to slow performance because of the translation at runtime. But it does not add much overhead to the data or applications... only a single... Most potentially...



Options for

## DATE CONVERSION

**C**onversion, a critical portion of Year 2000 solutions, can be broken down into five categories: date expansion, date compression, windowing, encapsulation and bridging.

**Date expansion** is the conversion technique that provides the most value when used on applications that have long-term value to the organization, where performance is important, and where systems must use archived data.

But it is not the best option when developers are trying to beat the clock to get code converted, because: 1) every application and database that has a date must be converted; 2) the amount of code being changed means more chance for error; and 3) every client interface and report must be rewritten to handle the new date format. It's a bad idea to expand the energy needed for date

*Caution:* there may be side effects to windowing. It may slow performance and, due to the nature of the translation of dates based on a particular pivot date, is only reliable when used on data that spans 100 years or less. For data and dates spanning 100 years or more, there is a possibility that the dates will not be translated correctly. IT must also be very familiar with the application and its use of dates. Some application screens may have to be rewritten.

As a conversion technique, encapsulation is best used with applications that have contact only with each other or a single database and do not exchange data with applications outside the closed loop. It is not a performance-oriented option, especially in data-intensive applications, because of the data translation that must take place. But it's a fast option and one that does not change the application.

*By [illegible] [illegible]*  
[illegible]



Setting a new standard...  
for solving the Year 2000 Problem.

## *Reasoning/2000*

*A Second Generation Year 2000 Solution - So Different That It Hurts*

Reasoning has been offering sophisticated reengineering and transformation software technology for more than a decade. Over 15 years of R&D has gone into the world's most effective technology for accurately analyzing and automatically transforming code—to deliver extraordinary productivity at low cost.

Today, leading Year 2000 services firms have processed over 500 million lines of code using Reasoning technology. Listen to Mr. Frank Driscoll, President of Formal Systems, the world's leading provider of reengineering and Year 2000 services for the Natural language:

*"Reasoning's 2000 compliance software is the most comprehensive and accurate around. Formal has adapted it and successfully processed over 30 million lines of Natural for Year 2000 impact analysis and has over 30 million lines under contract for full remediation."*

Reasoning/2000 sets a new standard for precision accuracy and automatic remediation in IBM COBOL environments using the advanced capabilities of Reasoning's second generation solution.

Chances are you need a more powerful Year 2000 solution today. The success of your company in the new millennium could depend on it.

**Reasoning offers reengineering, transformation services and formal Reasoning/2000 to corporate accounts, system integrators and software services firms. Contact us for information about these programs.**

## REASONING

Visit us at <http://www.reasoning.com>. Call us toll-free at 1-888-FIX-4-Y2K (888-349-4925).

Reasoning, Reasoning/2000, Reasoning's, Reasoning Transforms People, and the R Logo are trademarks of Reasoning Inc. All other trademarks are property of their respective owners. Copyright © 1997 Reasoning, Inc. All rights reserved.

ness card "only" reads Year 2000 project manager. Arena also must currently contend with moving several of the company's systems, including financials, purchasing, inventory and human resources, from a mainframe to a client/server system. "We'll put \$15 million into moving into client/server. I'll probably not spend \$2 million on the Year 2000," he says.

Further complicating his life these days is the fact that Atlantic Energy may be acquired by another utility company within a year, and possibly as soon as the first quarter of 1998.

But until the merger is approved, there is always the chance it could fall through. So while Arena is helping plan a Year 2000 strategy for the merged company, for now he must remain focused on Atlantic Energy's own Year 2000 problem. "My focus has to be on things today," he says.

Right now, Arena's main concern is the Year 2000 compliance of external systems, such as the environmental emission and other reports sent to state-run systems. "Since we must react to their systems, there will be a lot of work to do in 1999," he says.

Atlantic Energy first took notice of the century rollover situation in the early 1990s, but back then, it was seen

as a "not now problem." The utility didn't do much about it until June 1996, when Arena became Year 2000 project manager. Shortly after, he attended a Year 2000 conference that he said "struck the fear of God" into him.

The biggest impact of the Year 2000 date change for Atlantic Energy will be

testing, are currently ongoing.

Last September, Atlantic Energy began using a tool set from Platinum Technology called TransCentury Analysis, which can perform a Year 2000 impact analysis and determine what it will cost to repair the code.

In its inventory, Atlantic Energy has

## **"We'll put \$15 million into moving into client/server. I'll probably not spend \$2 million on the Year 2000."**

**— Chris Arena, Y2K project manager**

on generating power and billing its 450,000 customers. "Payroll is important, but it is not critical to your business," says Arena. "What would bring the business to its knees is not supplying power or billing customers."

To ensure that Atlantic Energy would be Year 2000-compliant so it could continue to supply power, Arena came up with a three-phase plan. Phase 1, which involved developing a project plan and performing a system inventory, was completed in January, 1997. Phase 2, which involves executing change strategies on all platforms, and Phase 3, which involves quality assurance and

6,000 programs with 10 million lines of code. The impact analysis showed that 1,500 programs in 20 core business systems had to be changed. "There probably are no more than 400 lines of code in those programs that need to be changed," says Arena. "The issue is finding them."

Using the TransCentury product, Atlantic Energy was able to analyze all its systems in about three months. "It may have taken one year to look at every program manually," notes Arena. "And it wouldn't have been as accurate."

Another tool the company uses is Xpediter Xchange. The tool, from Com-

## **To outsource or not to outsource**

The biggest challenge in date conversion is figuring out a Bangalore, India, provider of software services for multinational clients.

How a piece of code in one program affects pieces in other programs. Bangalore provider of software services to a multinational customer.

It's a time-consuming business, and it's expensive.

puware in Farmington Hills, Mich., allows Atlantic Energy to test and simulate dates. For example, in any batch or CICS program, it could test its software in a leap year and in the year 2001.

The utility is working on Year 2000 compliance in four areas: core business applications on legacy systems, including Cobol and SAS applications; applications software; file servers and PCs (particularly BIOS problems on the latter); and departmental systems.

When it comes to Year 2000 compliance, Arena says that the last area is the most difficult. Over the years, individual departments have brought in hardware and software without checking with the central IS organization. Of these maverick software, Arena says, "We do not support it."

The problem is that these programs cannot communicate with much of the software in use at power plants, which is proprietary. For example, Atlantic Energy must use emission-control software that determines the amount of pollution and noxious gases coming from its plants. Reports of these emissions must then be sent to the federal government's computer systems.

Arena began his plan to ensure company-wide compliance by writing letters to all 30 department heads with a copy

of all data sets from the mainframe for which each department is responsible. He says there are 16,000 such computer programs used by the departments. He also told the departments they would need to make sure that any system not provided by IS is Y2K-compliant. "No system will be on the mainframe that is not Year 2000-compliant," he vows.

Maintenance releases to software developed in-house are handled using windowing. In most cases, date-related data in production applications falls in the range of January 1, 1950 to December 31, 2029. If the two-digit representation of a year is 50 or higher, it is interpreted as a 20th century date (19YY). If it is 29 or lower, it is interpreted as a 21st century date (20YY).

Bottom line: Arena expects that Atlantic Energy will complete its Year 2000 conversion by the end of 1998.

#### No throwaway

A key factor in selecting an automated tool is the ability to reuse it for more than Year 2000 date changes.

For instance, the state of Nevada's Lockard was pleased to discover a side benefit to using the MatrixData conversion service: It enabled the state to identify not only dead code but also problems in code that are not related to

the Year 2000. This allows the state's department of information services "to take care of other problems while going through Year 2000 fixes," she says.

American Bankers was also glad when it realized it will be able to use the Revolve/2000 tool from Micro Focus even after it completes its Year 2000 analysis and conversions. Notes appli-



staff's exposure to long-term, laborious, boring work that is

hardware, which includes an IBM AS/400, an MVS mainframe,

ness card," only," reads Year 2000 project manager, Arena also must currently contend with moving several of the company's systems, including financials, purchasing, inventory and human resources, from a mainframe to a client/server system. "We'll put \$15 million into moving into client/server. I'll probably not spend \$2 million on the Year 2000," he says.

Further complicating his life these days is the fact that Atlanta Energy may be acquired by another utility company within a year, and possibly as soon as the first quarter of 1998.

But until the merger is approved, there is always the chance it could fall through. So while Arena is helping plan a Year 2000 strategy for the merged company, for now he must remain focused on Atlanta Energy's own Year 2000 problem. "My focus has to be on things today," he says.

Right now, Arena's main concern is the Year 2000 compliance of external systems, such as the environmental emission and other reports sent to state-run systems. "Since we must react to their systems, there will be a lot of work to do in 1999," he says.

Atlanta Energy first took notice of the century rollover situation in the early 1990s, but back then, it was seen

as a "not now problem." The utility didn't do much about it until June 1996, when Arena became Year 2000 project manager. Shortly after, he attended a Year 2000 conference that he said "struck the fear of God" into him.

The biggest impact of the Year 2000 date change for Atlanta Energy will be

testing, are currently ongoing.

Last September, Atlanta Energy began using a tool set from Platinum Technology called TransCentury Analysis, which can perform a Year 2000 impact analysis and determine what it will cost to repair the code.

In its inventory, Atlanta Energy has

**"We'll put \$15 million into moving into client/server. I'll probably not spend \$2 million on the Year 2000."**

— Chris Arena, Y2K project manager

an generating power and billing its 450,000 customers. "Payroll is important, but it is not critical to your business," says Arena. "What would bring the business to its knees is not supplying power or billing customers."

To ensure that Atlanta Energy would be Year 2000-compliant so it could continue to supply power, Arena came up with a three-phase plan. Phase 1, which involved developing a project plan and performing a system inventory, was completed in January, 1997. Phase 2, which involves executing change strategies on all platforms, and Phase 3, which involves quality assurance and

6,000 programs with 10 million lines of code. The impact analysis showed that 1,500 programs in 20 core business systems had to be changed. "There probably are no more than 400 lines of code in those programs that need to be changed," says Arena. "The issue is finding them."

Using the TransCentury product, Atlanta Energy was able to analyze all its systems in about three months. "It may have taken one year to look at every program manually," notes Arena. "And it wouldn't have been as accurate."

Another tool the company uses is Xpediter Xchange. The tool, from Com-

## To outsource or not to outsource

The biggest challenge in date conversion is figuring out how a piece of code in one program affects pieces in other programs. Tracking such ripple effects is a seemingly endless task, since testing every branch of every program is impossible, from the standpoints of both money and time.

B.J.'s Wholesale Club, a membership-only warehouse club headquartered in Natick, Mass., has 6 million lines of source code in its 10 mainframe-based applications. To ensure that

a Bangalore, India, provider of software services for multinational clients.

B.J.'s does the final testing in-house, and is converting other desktop systems and in-store, point-of-sales systems itself.

"Our business plans would have been significantly impacted if we tried to do this in-house," said Tom McMahon, B.J.'s manager of systems services. The current schedule calls for mainframes to be converted by July.

power are in Farmington Hills. Much allows Atlantic Energy to test and simulate dates. For example, in any batch in CICS program, it could test its software in a leap year and in the year 2001.

The utility is working on Year 2000 compliance in four areas: core business applications on legacy systems, including Cobol and SAS applications; applications software; file servers and PCs (particularly BIOS problems on the latter); and departmental systems.

When it comes to Year 2000 compliance, Arena says that the last area is the most difficult. Over the years, individual departments have brought in hardware and software without checking with the central IS organization. Of these mismatches, Arena says, "We do not support it."

The problem is that these programs cannot communicate with much of the software in use at power plants, which is proprietary. For example, Atlantic Energy must use emissions-control software that determines the amount of pollution and noxious gases coming from its plants. Reports of these emissions must then be sent to the federal government's computer systems.

Arena began his plan to ensure company-wide compliance by writing letters to all 50 department heads with a copy

of all data sets from the mainframe for which each department is responsible. He says there are 16,000 such computer programs used by the departments. He also told the departments they would need to make sure that any system not provided by IS is Y2K-compliant. "No system will be on the mainframe that is not Year 2000-compliant," he vows.

Maintenance releases to software developed in-house are handled using windowing. In most cases, date-related data in production applications falls in the range of January 1, 1930 to December 31, 2029. If the two-digit representation of a year is 30 or higher, it is interpreted as a 20th century date (19XY). If it is 29 or lower, it is interpreted as a 21st century date (20XY). Bottom line: Arena expects that Atlantic Energy will complete its Year 2000 conversion by the end of 1998.

#### No throwaway

A key factor in selecting an automated tool is the ability to reuse it for more than Year 2000 date changes.

For instance, the state of Nevada's Luckard was pleased to discover a side benefit to using the MatrixDigm conversion service. It enabled the state to identify not only dead code but also problems in code that are not related to

the Year 2000. This allows the state's department of information services "to take care of other problems while going through Year 2000 fixes," she says.

American Bankers was also glad when it realized it will be able to use the Revolve/2000 tool from Macro Focus even after it completes its Year 2000 analysis and conversions. Notes appli-



staff's exposure to long-term, laborious, boring work that is not career enhancing," said BJ's CIO Roland Laferriere.

The outsourcing decision went a different way for McCormick & Co., Inc., a maker of spices based in Hunt Valley, Md. In 1995, the company ran into problems with applications that projected dates past 1999. It initially considered outsourcing the entire Year 2000 conversion project, but was

hardware, which includes an IBM AS/400, an MVS mainframe, LANs and RS/6000 systems. McCormick uses TransCentury Analysis from Platinum Technology. It also uses three products from Micro Focus: Expert to assist the renovation team; Revolve/2000 to analyze systems, locate date changes and modify the source code; and Cobol Workbench to perform initial testing on the mainframes.

## Too late?

The perception is that it is too late to start doing four-digit data conversions but, according to Frank Driscoll, president of consulting firm Formal Systems Inc., they still can be done with automated tools. Theresa D'Neil, vice president of marketing, data warehousing, for Platinum Technology, said it may be too late to use date expansion on mainframes, but it is still an option for AS/400 systems if automated tools are used.

According to Ted Swoyer, director of marketing at Peritus Software Services, it is still possible to use date expansion if one uses techniques based on neural network technology, which adds intuitive logic to finding and correcting date problems. Quoting Gartner Group figures, he said one programmer can fix 100,000 lines of code per year by date expansion. The AutoEnhancer/2000 tool from Peritus, he said, allows a programmer to do date expansions on 3.5 million lines of code.

The nearer we get to the fatal date, the better automated search tools will look. According to Capers Jones, chairman of consulting firm Software Productivity Research, a company that begins its repairs this year can correct 80% of its applications by 1999 if it does so manually, as opposed to 99% if it uses automated search tools. If it starts in 1996, by 1999 it could correct only 70% of its applications manually and only 85% using search tools. Projections that put off starting until 2000 cap expect to fix only 50% of

errors, support executive Layman, the company will be able to use the tool "for all sets of analysis into the future."

### Trust no one

Earlier in this supplement, Aberdeen Group issued a warning to companies. "Even if an organization is satisfied that it is Year 2000-compliant, there's no guarantee its partners are. There's no foolproof solution for working with partners except to communicate loud and clear — and often — about conversion plans and needs."

That is what Atlantic Energy has done. To coordinate Year 2000 updates, project manager Arena sent letters to all 40 of the utility's hardware and software vendors. In them, he asked each one for a statement of Year 2000 compliance for products used by the utility; the vendor's update plan if the products are not yet Year 2000-compliant; the vendor schedule and target dates of upgrades if the products are not Year 2000-compliant; and the potential cost to Atlantic Energy for upgrades of vendor products. "We require a response in writing," he says.

Coordinating multiple software vendors is also a key part of American Bankers' Year 2000 plan. In fact, the insurer already is in the process of replacing an application that calculates commissions on life insurance because the application vendor does not plan on making a Year 2000 enhancement.

Spice maker McCormick also has run a mainstream applications with which it must contend. These include the systems that control the filling of bottles on a production line and sales of flour and salt that are controlled by computers.

"We'll have to contact suppliers and vendors to see if they will change these systems," says project director Bolter. "We send them a form to see if they are compliant, when they will be compliant, and how they will make their software compliant. But ultimately, you must test things you sell."

To central outside vendors — which

include suppliers of application software, computer hardware and system software, embedded systems and service providers — the following steps are recommended by Year 2000 guru Peter de Jager and Richard Bergeon, vice president of technology services for Data Dimensions Inc., a Bellevue, Wash., vendor of Year 2000 services, in their new book, *Surviving the Year 2000 Counting Crisis*.

- 1 Centralize vendor management responsibility.
  - 2 Set vendor policies for acquisitions.
  - 3 Determine whether changes are required for each purchased product.
  - 4 Establish the extent horizons for each product.
  - 5 Identify the current vendor for each product.
  - 6 Build a vendor database.
  - 7 Determine contractual responsibility.
  - 8 Contact the vendor for plans.
  - 9 Plan implementation steps.
  - 10 Communicate the vendor's and your own implementation plans to others who need to know.
- Inevitably, some data problems will occur, no matter how carefully companies comb through code or manage vendors. "What concerns all of us is whether we have identified everything," said Nevada's Lockard.

As the Aberdeen Group noted earlier, it is a good idea to have a contingency plan in place just in case things don't pan out on January 1, 2000. Better still to have a contract with a service provider to deliver emergency support in the new century. Although it is estimated that 85% of Year 2000 problems will be fixed by the turn of the century, the remaining 15% will be very costly in terms of damage to systems.

As James of Software Productivity Research notes, "There will be long-range recovery costs." ■

*Anna Frey is a freelance writer in Cambridge, Mass., who covers technology, business and related issues.*



## Too late?

The perception is that it is too late to start doing four-digit data conversions but, according to Frank Driscoll, president of consulting firm Formal Systems Inc., they still can be done with automated tools. Theresa O'Neil, vice president of marketing, data warehousing, for Platinum Technology, said it may be too late to use data expansion on mainframes, but it is still an option for AS/400 systems if automated tools are used.

According to Ted Swoyer, director of marketing at Peritus Software Services, it is still possible to use data expansion if one uses techniques based on neural network technology, which adds intuitive logic to finding and correcting data problems. Quoting Garbar Group figures, he said one programmer can fix 100,000 lines of code per year by data expansion. The cost per line is \$100,000, but he says to

include suppliers of application software, computer hardware and system software, embedded systems and service providers — the following steps are recommended by Year 2000 guru Peter de Jager and Richard Bergson, vice president of technology services for Data Dimensions Inc., a Bellevue, Wash., vendor of Year 2000 services, in their new book, *Surviving the Year 2000 Computing Crisis*.

### Trust no one

Earlier in this supplement, Aberdeen Group issued a warning to companies: "Even if an organization is satisfied that it is Year 2000-compliant, there's no guarantee its partners are. There is no foolproof solution for working with partners except to communicate loud and clear — and often — about conversion plans and needs."

That is what Atlantic Energy has done. To coordinate Year 2000 updates, project manager Arena sent letters to all 40 of the utility's hardware and software vendors. In them, he asked each one for a statement of Year 2000 compliance for products used by the utility; the vendor's upgrade plan if the products are not yet Year 2000-compliant; the vendor schedule and target dates of upgrades if the products are not Year 2000-compliant; and the potential cost to Atlantic Energy for upgrades of vendor products. "We require a response in writing," he says.

Coordinating multiple software vendors is also a key part of American Bankers' Year 2000 plan. In fact, the insurer already is in the process of replacing an application that calculates commissions on life insurance because the application vendor does not plan on making a Year 2000 enhancement.

Spice maker McCormick also has non-mainstream applications with which it must contend. These include the systems that control the filling of bottles on a production line and silos of flour and salt that are controlled by computers.

"We'll have to contact suppliers and vendors to see if they will change these systems," says project director Bolster. "We send them a form to see if they are compliant, when they will be compliant, and how they will make their software compliant. But ultimately, you must test things yourself."

To control outside vendors — which

include suppliers of application software, computer hardware and system software, embedded systems and service providers — the following steps are recommended by Year 2000 guru Peter de Jager and Richard Bergson, vice president of technology services for Data Dimensions Inc., a Bellevue, Wash., vendor of Year 2000 services, in their new book, *Surviving the Year 2000 Computing Crisis*.

- 1 Centralize vendor management responsibility.
- 2 Set vendor policies for acquisitions.
- 3 Determine whether changes are required for each purchased product.
- 4 Establish the event horizons for each product.
- 5 Identify the current vendor for each product.
- 6 Build a vendor database.
- 7 Determine contractual responsibility.
- 8 Contact the vendor for plans.
- 9 Plan implementation steps.
- 10 Communicate the vendor's and your own implementation plans to others who need to know.

Inevitably, some data problems will occur, no matter how carefully companies comb through code or manage vendors. "What concerns all of us is whether we have identified everything," said Nevada's Lockard.

As the Aberdeen Group noted earlier, it is a good idea to have a contingency plan in place just in case things don't pan out on January 1, 2000. Better still to have a contract with a service provider to deliver emergency support in the new century. Although it is estimated that 86% of Year 2000 problems will be fixed by the turn of the century, the remaining 14% will be very costly in terms of damage to systems.

As Jones of Software Productivity Research notes, "There will be long-range recovery costs." ■

*Anne Fortig is a freelance writer in Cambridge, Mass. who covers technology, business and related issues.*



# Into the Year 2000 without a hitch...



That the Year 2000 problem will seriously affect the stability of corporations across the globe, is a foregone conclusion. But it surely isn't late for a discussion on the perfect solution to overcome the millennium bug.

Presenting *Infu2000™*.

The offshore-based and fixed price conversion service from Infosys. A service that is structured to implement the century change conversion without straining your resources. A service from a company with over 1,600 people.

*Infu2000™* is designed to significantly automate the process of system change for effective Year 2000 compliance. It's built around a set of analysis, change and testing tools and a robust change management methodology. Most of the compliance conversion is done offshore, at Infosys' state-of-the-art facilities in India, leading to significant cost savings. Ready availability of trained personnel and the time-zone difference allows adherence to aggressive deadlines. Above all, *Infu2000™* comes from Infosys; an ISO 9001/TickIT certified and highly respected software organization in India.

If you want to ensure that your systems are millennium compliant on a fixed schedule, call your nearest Infosys representative to discuss a plan for your company.

## ITL Infosys

### In the US

#### U.S. Head office

425-40 Cherry Street  
Suite 130  
Fremont CA 94536  
Tel: (510) 770-9883  
Fax: (510) 770-9499  
E-mail: [usinfo@inf.com](mailto:usinfo@inf.com)

#### Midwest

One Tower Lane  
Suite 1700  
Oakbrook Terrace IL 60181  
Tel: (800) 373-6550  
Fax: (800) 373-6551  
E-mail: [usa@inf.com](mailto:usa@inf.com)

#### Massachusetts

660 Washington Street  
Suite 211  
Dorham MA 01926  
Tel: (617) 481-3063  
Fax: (617) 481-1517  
E-mail: [usa@inf.com](mailto:usa@inf.com)

#### New Jersey

191 US Hwy 22  
Suite 200  
Bridgewater NJ 08807  
Tel: (908) 704-9815  
Fax: (908) 704-9820  
E-mail: [usa@inf.com](mailto:usa@inf.com)

#### Southern California

4560 MacArthur  
Suite 500  
Newport Beach CA 92660  
Tel: (714) 475-3295  
Fax: (714) 475-3293  
E-mail: [usa@inf.com](mailto:usa@inf.com)

#### Texas

14275 Macaway Road  
Suite 200  
Dallas TX 75244  
Tel: (214) 687-8115  
Fax: (214) 687-8116  
E-mail: [usa@inf.com](mailto:usa@inf.com)

### In Europe

#### Netherlands

Infotek  
Econome Street 30  
6433 RC Heerlen  
The Netherlands  
Tel: 31-45-523 7375  
Fax: 31-45-521 8325  
E-mail: [nlinfo@inf.com](mailto:nlinfo@inf.com)

#### United Kingdom

Suite 420 Premier Suites  
Exchange House  
494 Midsummer  
Boulevard  
Milton Keynes MK3 2EA  
United Kingdom  
Tel: 44 1 908 508 272  
Fax: 44 1 908 508 275  
E-mail: [ukinfo@inf.com](mailto:ukinfo@inf.com)

### In India

#### Bangalore, India

Electronics City,  
Hosur Road  
Bangalore 561 206, India  
Tel: 91 80 852 0261  
Fax: 91 80 852 0262  
E-mail: [india@inf.com](mailto:india@inf.com)



With the right  
protection, the  
century change  
isn't nearly so  
frightening.

Viasoft's Bridge 2000® fixes your critical applications today so your business stays afloat tomorrow.

**VIAISOFT**

# Data warehouses need user help

CONTINUED FROM PAGE 47

said. Finding business users with free time is strike one.

Strike two is that different business units may have conflicting ideas of what they want from a data warehouse.

And strike three is that users often don't really know what they want. Data warehouses and smaller data marts are pools of historical information that can be analyzed to back up decisions and spot trends. But in many cases, warehousing may be trying to automate business processes that don't exist yet.

"Most of our user base hasn't had access to lots of data. When you tell them they can have that, they just have a very difficult time even conceptualizing it," said Jeff Wolff, director of information access at PacifiCare Health Systems, Inc. in Cypress, Calif.

Faced with that kind of blank response, traditional IS technicians for gathering users' requirements simply don't work, Wolff and others said. As a result, IS workers may have to locate a small number of interested users and then dig deeper into the business process than they typically go.

For example, Wolff's staff worked closely with one marketing manager when it started to develop a data warehouse for a health insurance company that was acquired by PacifiCare this year. That helped the IS workers build a prototype that they could demonstrate to other users, he said.

MCI Communications Corp.'s mass markets division in Denver went even further. The long-distance operation shifted Chris Courtin from its

marketing to IS and put him in charge of a data mart project.

"I knew enough about databases to be kind of dangerous, and that really helped," said Courtin, who is now manager of systems development for business operations at the MCI unit. "I could stand in for the users and work with the developers one-on-one to kind of hand-hold them through the design process."

Anthem, Inc., a \$6 billion health insurer in Indianapolis, faced a different problem when it started to combine three data warehouses following a corporate merger. End users "knew very much what they wanted," said Joe Bruscato, an internal database consultant at Anthem. "But they were all focused on their own perspectives."

Getting different departments to agree on a warehouse

design was a challenge, Bruscato said. "We're hoping it will satisfy all the needs, but in realistic terms, you never get it perfect for everybody."

Further complicating things is the organic nature of data warehouses, which often have to change as different business needs come and go.

Warehouse managers "have to be like a doctor talking to patients about their symptoms," said Richard Winter, a Boston-based database consultant. "But that is something most IS organizations aren't well set up to do."

## Online software buying drops hurdles

CONTINUED FROM PAGE 47

curity, encryption, delivery and buy-and-sell functions of some software sold online.

To overcome user resistance to electronic software distribution, TestDrive/Internet now offers a virtual installation process that lets a user preview the software — and uninstall the trial version — without altering the user's system configuration.

Santa Clara, Calif.-based TestDrive's wrapper technology does this by partitioning part of the user's hard drive and handling all the Windows functions from within that space, thus eliminating potential systems conflicts from downloading software.

Users get full-product trials, rather than versions that allow access to only a limited set of features and functions. If the user decides during the trial period to purchase the product, a key is provided to unlock the proprietary encryption features. Users can also get a digital receipt to verify the software pur-

chase in case of a system crash or conflict.

One user at a large West Coast biotechnology company said being able to test the software before making a purchase would help his evaluation process. "I will be able to download a full version of multiple products, test them and buy only what I like. And I don't have to worry about the software trial crashing my entire system," said the systems analyst, who asked not to be named.

Several large software publishers, including McAfee Associates, Inc. in Santa Clara, Calif., Microsoft Corp., Starfish Software in Santa Cruz, Calif., and Lotus Development Corp. are using the technology to wrap products sold online.

According to a recent survey by Jeffrey Tarter, editor of "SoftLetter," an industry newsletter in Watertown, Mass., a majority of independent software vendors expect more than one-third of their revenue to come

through electronic distribution channels by the end of next year.

Amy Wohl, editor of "TrendLetter," an industry newsletter in Northbrook, Pa., said the electronic distribution market is still in the early stages, but it will become an important commercial distribution channel. But first, several things have to happen, she said.

There needs to be a better infrastructure to connect users with vendors and middle players such as merchants and distributors, Wohl said. "Until all so need controls that are appropriate to the value of the goods being sold, which is relatively high when you consider the time it takes to download and the costs of the person performing the sale," she said.

And, Wohl said, "large monolithic software" packages, such as Microsoft Office, need to be split into components "so users can buy incremental pieces or upgrades and download only the pieces they need." □

## Year 2000

CONTINUED FROM PAGE 47

a company's inventory and ordering procedures, or shut down a whole system.

Analysts and users said companies finally are tackling the year 2000 problem. The next step will be getting tools to make sure they haven't created a bigger monster than they slayed. Those tools are starting to hit the market, with Newburyport, Mass.-based Cyranco, Inc. coming out with TestStream 2000.

"You spend all that time correcting the [two-digit field problems], and how do you know you haven't created other problems," said Pete Humble, a systems consultant at Philadelphia-based CD Interactive Services, Inc. "The cost of going through and testing all over again is so extreme, it doesn't usually get done."

### SEARCHING FOR DOUBLES

Humble has been busy testing software for the year 2000. TestStream 2000 and said he will put it to use with any client working on the year 2000 problem. Most year 2000 tools, such as IBM's Visual Age for Year 2000 port package, search code for any two-digit fields that may cause problems. The developer then fixes the problem code.

TestStream 2000 lets testers and developers run simulated transactions and programs to make sure the programs run the kind of code, said Wohl. "You're doing any code changes to find the problem areas or fix, to make sure more problems haven't been created."

### MORE TOOLS COMING

Some analysts said TestStream 2000 will lead a new round of year 2000 tools.

"The majority of people involved in year 2000 haven't gotten this far yet. But as they do, there's starting to be a call for this kind of tool," said Michael Barnes, an analyst at Harwitz Group, Inc. in Newton, Mass.

"Companies like Compuware and Computer Associates will start to come out with some. Platinum is coming out with this kind of tool," said Wohl. "There aren't a lot like Cyranco's product. Not yet," he said.

Cyranco's TestStream 2000 runs on Unix and Digital Equipment Corp.'s OpenVMS operating systems. A Windows NT version is also on the drawing board. □

## SHORTS

### OLAP vendor renamed

Planning Sciences International, Inc. in Wallisfield, Mass., a maker of online analytical processing (OLAP) software, said it is changing its name to Gentia Software. Gentia is the name of the firm's software.

### Forte in CORBA crowd

Iona Technologies, Inc. in Burlingame, Calif., and Forte Software, Inc. in Oakland, Calif., are working together to embed their Object Request Broker in Forte's development environment. Forte is joining vendors that support the Common Object Request Broker Architecture (CORBA).

Forte's support for Orbix is expected to be included in Version 3 of Forte Application Development Environment, due to ship in the third quarter.

### Updated SureTrak

Primavera Systems, Inc. is shipping an updated version of its project management tool. Includes high-speed project planning and control capabilities for work group users. SureTrak Project Manager 2.0 features Project KickStart to streamline the process of getting projects started, a Web Publishing Wizard and Primavera Post Office for improved communications among team members, according to the Rela-

Cymond, Pa., software developer. It costs \$399. Current users can upgrade for \$199.

### Middleware adapter

Verant Object Technology Corp. in Menlo Park, Calif., is working with Thought, Inc. in San Francisco on an adapter for Thought's CodaBase cross-database middleware. The adapter will let users transfer data between relational databases and the Verant object database. CodaBase is written in Java and doesn't require database-specific coding. It offers a link between back-end legacy systems and newer object-based operations. It will be available later this month for \$1,500 per developer seat.



It's the  
new  
Pentium® 4 processor  
from Intel®. One chip.  
One line.

With 4MB cache, it's  
5.0 billion transistors, and it  
works, is simple, and it's





NORTEL  
INTRODUCES  
POWER  
NETWORKS



Is your business running at the  
speed of Indy? It can be.

**INTRODUCING POWER NETWORKS.** Today, at the Indianapolis Motor Speedway, there's something moving faster, more reliably and more efficiently than ever before: their new digital communications and computer network. A Power Network. Designed by Nortel.

Customized to Indy's specific needs, the Power Network integrates and enhances all of the Motor Speedway's existing communications networks. So every aspect of their business operations - from their telephone system to global Web access on the Internet to their call center - works faster, more reliably and more cost efficiently.

All of which allows them to truly deliver for their customers. From the drivers and teams to the fans, both at the race and around the world. And a Power Network can do the same for you. Just give us a call or head for our Web site and find out if your business is moving as fast as it can be.

**NORTEL**  
NORTHERN TELECOM

© 1999 Nortel Networks Corporation. All rights reserved. Nortel, the Nortel logo, and Power Networks are trademarks of Nortel Networks Corporation. All other trademarks are the property of their respective owners.

# The Enterprise Network

LANs • WANs • Network Management

## Briefs

### MAKING THE GRADE

Schools for grades K through 12 represent less than 3% of all U.S. business sites. Nonetheless, they install more small routers because of budget pressures and Internet demand.

Percentage of installed small routers in U.S.\*



\*Projected  
Source: Computer WorldSource, LA Jolla, Calif.

## Museum exhibits faith in Novell, NDS

By Laura DiDio  
NEW YORK

### SYMMETRY

That's what the famed Solomon R. Guggenheim Museum here has always strived for in its architecture and exhibits. And now the museum is charting the same course with its networks.

The Guggenheim is in the midst of an all-Novell, Inc. software upgrade. It includes integrating its NetWare 3.x networks to IntranetWare and adding the GroupWise and ManageWise packages.

The Novell intranet, which will also include Novell Directory Services (NDS) and Java and Internet capabilities, will allow the museum to achieve instant, secure, managed and collaborative links with several other Guggenheim sites worldwide, said Leonard Steinbach, director of information technology at the museum.

The resulting network will include a corporate intranet for internal communications and endow the museum with Internet access for interaction with

Museum, page 56

The Guggenheim's Leonard Steinbach's three main criteria in choosing an all-Novell installation were reliability, supportability and price/performance economies of scale

## Workflow system improves grocer's supplier ties

By Barb Cole-Gomolski

WHEN THE Stop & Shop Cos., a New England grocery chain, blended workflow and document imaging with its accounting system, it expected to have fewer people processing invoices.

The surprise is how the application has helped the chain improve its relationships with suppliers, said Bob Bersani, the company's manager of financial and headquarters systems.

With the system, the Quincy, Mass.-based company can better

manage accounts by routing all the invoices from a particular supplier to the same worker or changing the priority of work.

"This serves as a plus in negotiating," Bersani said. "You may have a [supplier] that is offering a special deal, but only if you can quickly wire the money into their account," he said. Prior to adding workflow, the company processed invoices on a first-in/first-out basis, he said.

In addition to faster and more flexible payments, the system has helped the company take the blout out of its bill paying

process. Stop & Shop's revamped accounts payable system will pay most invoices automatically. Only "problem" invoices — those that can't be matched up with purchase orders or fail to meet the company's financial guidelines — are routed to workers.

Handling only problem invoices works for the supermarket chain because it negotiates deals up-front with most of its suppliers. In most cases, the system simply matches invoices with purchase orders to verify that the information on the

### On Stop & Shop's Net

- Reduce accounts payable analysis from 50 to 20
- Offer various payment methods to vendors
- Automate payment of bills, except for problem invoices

invoice is correct.

"This is a pretty common way of putting workflow software to work," said Carl Frappalo, an executive vice president at Delphi Consulting Group, Inc., a research firm in Boston. "Companies take the workflow rules and use them to automate mundane processes."

Workflow software will let Stop & Shop reduce the number of accounts payable analysts from about 50 to a bit more than 20, Bersani said.

He said the company has long believed that workflow and document imaging could help bring order to the paper-based chaos of its payment process. But imaging traditionally has been proprietary technology, and workflow systems weren't robust enough to handle the volume created by 200 stores, Bersani said. "That's changed now;

Supermarket, page 56

## Year 2000 could ring in call-center woes

Tips on tackling year 2000 compliance for telecommunications equipment

- Start planning now
- Be aggressive with your vendors
- Find out if your primary vendor will fix equipment it gets from a third-party vendor
- Determine what your vendor will do for free and what systems must be upgraded
- Test upgraded systems well before the year 2000 deadline

By Kim Girard

IF YEAR 2000 problems hit your computerized voice system, it could mean chaos for your call center — which is often the front door to a business.

But by planning now, telecommunications departments can avoid a lot of headaches, analysts said. Systems that aren't fixed could cause billing foul-ups and misrouted calls and pass false information on to customers. For example, a "We're closed" message intended for a

Year 2000 bug, page 56



# The Enterprise Network

LANs • WANs • Network Management

## Briefs

### MAKING THE GRADE

Schools for grades K through 12 represent less than 3% of all U.S. business sites. Nonetheless, they install more small routers because of budget pressures and Internet demand.

Percentage of installed small routers in U.S.\*



\*Projected

Source: 130,000 U.S. businesses  
Source: Computer Intelligence, La Jolla, Calif.

### Notes migration

Lotus Development Corp. announced software for migrating from Digital Equipment Corp. All-in-1 electronic-mail systems to Notes. The All-in-1 Migration Tool moves e-mail messages, distribution lists, databases and calendaring information from the Digital mail and groupware platform to Notes. The migration tool will be available from U.S.-based Abita Consulting Ltd., the Lotus Independent software vendor that developed it. The All-in-1 Migration Tool costs \$10 to \$17 per user.

### Exchange links

Toronto-based LinkAge Software, Inc. is shipping LinkAge Message Exchange 3.2, an upgrade of its messaging switch that is integrated with Microsoft Corp. Exchange 5.0. The software connects Exchange with IBM mainframe mail systems and Notes and CCMail. LinkAge Message Exchange 3.2 also has new directory synchronization features for CCMail. LinkAge Message Exchange 3.2 runs on Windows NT. Pricing starts at \$19,000.

## Museum exhibits faith in Novell, NDS

By Laura O'Donoghue  
New York

### SUMMARY

That's what the famed Solomon R. Guggenheim Museum here has always strove for in its architecture and exhibits. And now the museum is charting the same course with its networks.

The Guggenheim is in the midst of an all-Novell, Inc. software upgrade. It includes migrating its NetWare 3.x networks to IntranetWare and adding the GroupWise and ManageWise packages.

The Novell intranet, which will also include Novell Directory Services (NDS) and Java and Internet capabilities, will allow the museum to achieve instant, secure, managed and collaborative links with several other Guggenheim sites worldwide, said Leonard Steinbach, director of information technology at the museum.

The resulting network will include a corporate intranet for internal communications and endow the museum with Internet access for interaction with

Museum, page 56



The Guggenheim's Leonard Steinbach's three main criteria in choosing an all-Novell installation were reliability, supportability and price/performance economies of scale.

## Workflow system improves grocer's supplier ties

By Barb Cole-Camalis

When The Stop & Shop Co., a New England grocery chain, blended workflow and document imaging with its accounting system it expected to have fewer people processing invoices.

The surprise is how the application has helped the chain improve its relationships with suppliers, said Bob Bersani, the company's manager of financial and headquarters systems.

With the system, the Quincy, Mass.-based company can better

manage accounts by routing all the invoices from a particular supplier to the same worker or changing the priority of work.

"This serves as a plus in negotiating," Bersani said. "You may have a [supplier] that is offering a special deal, but only if you can quickly make the money into their account," he said. Prior to adding workflow, the company processed invoices on a first-in/first-out basis, he said.

In addition to faster and more flexible payments, the system has helped the company take the blast out of its bill paying

process. Stop & Shop's revamped accounts payable system will pay most invoices automatically. Only "problem" invoices — those that can't be matched up with purchase orders or fail to meet the company's financial guidelines — are routed to workers.

Handling only problem invoices works for the supermarket chain because it negotiates deals up-front with most of its suppliers. In most cases, the system simply matches invoices with purchase orders to verify that the information on the

### On Stop & Shop's list

- Reduce accounts payable analysts from 50 to 20
- Offer various payment methods to vendors
- Automate payment of bills, except for problem invoices

invoice is correct

"This is a pretty common way of putting workflow software to work," said Carl Frappardo, an executive vice president at Delphi Consulting Group Inc., a research firm in Boston. "Companies take the workflow rules and use them to automate mundane processes."

Workflow software will let Stop & Shop reduce the number of accounts payable analysts from about 50 to a bit more than 20, Bersani said.

He said the company has long believed that workflow and document imaging could help bring order to the paper-based chaos of its payment process. But imaging traditionally has been proprietary technology, and workflow systems weren't robust enough to handle the volume created by 200 stores, Bersani said. "The changed norm"

Supermarket, page 56

## Year 2000 could ring in call-center woes

By Kim Girard

IF YEAR 2000 problems hit your computerized voice system, it could mean chaos for your call center — which is often the front door to a business. But by planning now, telecommunications departments can avoid a lot of headaches, analysts said. Systems that aren't fixed could cause billing foul-ups and misrouted calls and pass false information on to customers. For example, a "We're closed" message intended for a

Year 2000 bug, page 56

### Tips on tackling year 2000 compliance for telecommunications equipment

- Start planning now
- Be aggressive with your vendors
- Find out if your primary vendor will fix equipment it gets from a third-party vendor
- Determine what your vendor will do for free and what systems must be upgraded
- Test upgraded systems well before the year 2000 deadline

BackOffice Family

Windows NT Server

SQL Server

Exchange Server

Proxy Server

Site Server

Systems Management Server

SNA Server

Future Servers

*Did somebody say*

**scala**

Microsoft®



BackOffice™

©1997 Microsoft Corporation. All rights reserved. Microsoft and Where do you want to go today? are registered trademarks and BackOffice is a trademark of Microsoft Corporation.

**Microsoft® BackOffice™ handles a terabyte of data  
a hundred million Web site hits a day  
1.8 million e-mails in 24 hours,  
each on a single server.  
It also handles a billion ATM transactions daily.**

# **bility?**

**And it delivers one of the highest throughput rates of any system ever tested.**

**All for as little as one-third the cost of UNIX-based systems.**

**We know it's a lot to absorb all at once.  
So you may want to read it again.**

**Or visit [www.microsoft.com/backoffice/scalability/](http://www.microsoft.com/backoffice/scalability/)**

Where do you want to go today? **Microsoft®**

## IBM rolls out several net support products

By Kristi Erick  
SAN FRANCISCO

IBM LAST WEEK released products aimed at simplifying network management.

The company announced several Ethernet and Token Ring network support products for PC networking environments, including two network adapter cards, a stackable Ethernet hub

and a Token Ring PC card.

The adapter cards — the EtherJet 100/10 Peripheral Component Interconnect (PCI) Adapter and the PCI Token Ring Adapter — include remote management capabilities that use IBM's Wake on LAN technology, officials said. Wake on LAN lets network managers power-on and manage a PC or server from a remote location. To take advantage of the remote management capabilities, users must have Wake on LAN-compatible systems.

Based on 32-bit technology, both adapters allow for full-duplex operation and support symmetrical multiprocessing processing. The adapters are equipped with device drivers for Windows 95, Windows NT, Novell, Inc. NetWare and IBM OS/2 Warp.

IBM will continue to offer the 100/10 Ethernet PCI and PCI Token Ring adapters without Wake on LAN technology for customers without a Wake on LAN-capable network, officials said.

### IN THE CARDS

IBM also released the Turbo 16/4 Token Ring PC Card, which lets users connect notebook PCs to Token Ring LANs that operate at 16M or 4M bps/sec. The card supports several operating systems, including Windows 3.x, Windows 95, Windows NT 3.5 or later, MS-DOS and all versions of OS/2.

The company also released the 8337 Ethernet Stackable Hub, which can support 107 port units, for a total of 107 ports per stack. In addition to System Network Management Protocol management support, the 8337 also provides Remote Monitoring capabilities and includes network security features, officials said.

IBM also announced new versions of its Nway Campus Manager for AIX, which allows network management of AIX-based machines on LANs, as well as network devices such as hubs and routers.

The EtherJet 100/10 PCI Adapter will be available this month for \$165. The PCI Token Ring Adapter, available next month, will sell for \$195. IBM officials said the Turbo 16/4 PC Card will be available this month for \$170, and the 8337 Ethernet Stackable Hub will be available in mid-July. Prices will start at \$849. Pricing and availability for the Novell software hasn't been announced. □

Erick writes for the IDG News Service in London.

## Museum exhibits faith in Novell, NDS

CONTINUED FROM PAGE 53

the public and the art world, Steinbach said.

The network setup will connect the Guggenheim's main branch with the Guggenheim Museum Soho in lower Manhattan. Later this year, links will be added to the Peggy Guggenheim Collection in Venice and the new Guggenheim Museum Bilbao in Spain, operated in partnership with Bilbao's Basque administration.

Steinbach said his three main criteria in choosing to do an al-

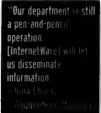
gorithm's estimate that IntranetWare would reduce maintenance and operations costs by 50%.

NDS, which contains a comprehensive database of all network resources and users, was another big selling point.

"It lets us quickly scan the hierarchical display to assign passwords and permissions, grant e-mail addresses and use the related Novell Application Launcher software to distribute and install software, updates and patches in minutes — not days or weeks," Steinbach said.

The Guggenheim will deploy the combination of IntranetWare and GroupWise for a veritable collage of services, including posting jobs internally, creating job ads for resume availability and posting dates for lectures, events and exhibits.

"IntranetWare will be wonderful. Our department is still a pen-and-pencil operation. It will let us disseminate information about benefits, open positions, personnel policies and training sessions," said Nina Chacko, director of the Guggenheim's personnel department. □



Novell installation were network reliability, supportability and price/performance economies of scale.

The museum considered rival Microsoft Corp.'s Windows NT and may still opt to install it as an application server running a SQL Server database. But the Guggenheim staff's longtime familiarity and satisfaction with NetWare, coupled with NDS, tipped the scales in favor of IntranetWare.

"Windows NT Server is fine, and for some people it may be better than IntranetWare. But as far as I'm concerned, IntranetWare, GroupWise and ManageWise give us a comprehensive set of tools that work in concert so that we can focus on our art. And we didn't have to rip out our infrastructure to do it," Steinbach said.

### COMPANY CONCERNS

Not that there weren't questions raised by the Guggenheim's top managers about the continued viability of Novell as a company. Robert Gebbie, the museum's deputy director of finance, raised the issue with Steinbach, who told him that despite problems, Novell is getting back on track. Gebbie also was swayed by the information systems

## Year 2000 bug could hit PBXs

CONTINUED FROM PAGE 53

Sunday could go out on a Monday.

To date, larger private branch exchange (PBX) vendors, including Lucent Technologies, Inc., Nortel, Inc. and Mitel Corp., have detailed which of their digital voice systems are year 2000-compliant and how to fix those that aren't.

Vendors are "a little bit late but getting on top of it," said Art Schoeller, a research director at Gartner Group, Inc. in Stamford, Conn. But Schoeller said half of midsize and large companies won't have fixes completed by the end of next year. By then, you're "starting to get up against a wall" because of the time it takes to implement fixes and test them when systems aren't as busy, he said.

### CAN WE TALK?

Despite the flurry of vendor press releases, Linda Hamilton, associate director of telecommunications at Beth Israel Hospital in New York, said she has heard nothing from vendors regarding what the hospital needs to do to inoculate PBXs, interactive voice response units, voice-mail and automatic call distributors against the year 2000 bug.

"From a planning perspec-

tive, it's critical to know what we're talking about in terms of dollars. Are you going to give me the upgrade for free? What is the most we'll have to pay? And when will the upgrade be available so we can test it long before the year 2000?" said Hamilton, who uses phone switches from Nortel, Mitel and Lucent.

Officials at Nortel, which detailed a year 2000 customers plan in March, said every Nortel product will be compliant or upgradable by October 1998. All Nortel equipment shipped since January is year 2000-compliant or will have an upgrade available by October 1998.

Most Mitel PBX products are year 2000-compliant — they can handle the date and time change. Those that aren't require a minor software upgrade, said Ken Dammont, head of voice systems at Mitel. Lucent also has committed to a year 2000-compliance strategy.

Schoeller suggested that companies partner with their IS departments on the year 2000 project because IS is probably further ahead in the game.

"You list these things go, and you find yourself against the wall. You'll have to pay up the nose," Hamilton said. □

## NEW PRODUCTS

DYNALINK SYSTEM CORP. has announced Forewarn 3.3, a client/server, enterprise-wide software monitoring package with Simple Network Management Protocol (SNMP), and GroupWise for enhanced data gathering functions.

According to the Raleigh, N.C., company, the SHMP Virtual Agent extends SNMP monitoring to all foundation equipment.

Pricing starts at \$3,995. Data Base Systems

(919) 596-9000  
www.made.com

IBENTRAL, INC. has announced Rightfax Enterprise 3.0, an enterprise network fax server.

According to the Tucson, Ariz., company, the software provides low-cost routing, load balancing and received fax routing technologies.

Pricing starts at \$2,995. Rightfax  
(602) 596-7000  
www.rightfax.com

## NETWORK OPERATING SYSTEMS

# Users' take on Microsoft and Novell hype-fests

By Laura DiDio

NETWORK OPERATING SYSTEMS rivals Novell, Inc. and Microsoft Corp. last week held dueling press conferences in New York. The vendors intended the events to shore up their installed customer bases and to gain new adherents—at the other's expense. Did the exaggerated level of hype work? Computerworld took a New York minute to poll several users on their network upgrade plans and to ask them for survival tips.

**Michael Kearney**, vice president of information systems at Phoenix Home Life Mutual Insurance Co. in Enfield, Conn., which has 3,500 users in a mixed NetWare and Windows NT Server shop:

"I really need Novell's NDS [Novell Directory Services] for Windows NT integration package. And I need it now; it will dramati-

cally reduce my administrative requirements. I'm able to replace one of my network managers to other tasks. NDS on Windows NT is Novell's bridge to staying alive.

"It's easy to get wrapped up with the latest and the coolest product. But our real day-to-day needs are controlling expenses and keeping the network up and running. NDS on NT will help us control expenses [by reducing] the amount of integration needed on the desktop. I'd also like to use Novell's extended NDS to support Lotus Notes.



Michael Kearney

"There's lots of technology all fighting for users and lots of user demands right now everyone wants to tell me how to run my business."

**Terry Stahling**, assistant commissioner for MIS and chief information officer at New York's Department of Transportation, which has more than 6,000 users:

"Consolidating and extending the life of our [Ranjan Systems, Inc.] Vines network operating system are key to us. We consolidated our three data centers into one main data center. By



Terry Stahling

doing so, we eliminated one IBM e361 mainframe and consolidated personnel. The result is an annual cost savings of \$400,000 to \$500,000. We won't buy new Vines servers, but by installing StreetTalk for Windows NT, we should be able to preserve our investment in current Vines 6.0 and 7.0 servers for three to five more years."

**Steve Sommer**, vice president of MIS at Hughes, Hubbard & Reed, Inc., a New York law firm with more than 1,500 users at headquarters and branch offices in the U.S., London and Paris:

"I've opted for an all-Windows NT and Microsoft Back-Office environment to provide us with integration and cut down on our management tasks.

"Coincidence wouldn't work for us. Installing the operating system or managing system is a two-headed mule. There are too many unknowns, too much retraining and readjusting. We migrated from NetWare to Windows NT. As far as I'm concerned, NDS stands for New Directions Sideways. Novell is going the way of Wopac and I just had about that. But it's Windows NT all the way for us."



Steve Sommer

## COMMENTARY

### Service with a simile

PATRICK DRYDEN

**A**mong the slew of snafu calls that barrage help desks daily are timid questions about performance. Circumstances are changing, however, as users gain access to monitoring tools and once-secre information. Quirky service by mysterious networks and far-flung systems is harder for callers to describe than in-your-face problems such as an application error or a failed disk drive. Those situations elicit explicit complaints. A caller might recite every word on the screen or describe how "the drive went 'rowr, rowr, rowr' before everything stopped working."

And though personally pressing, those problems affect one user at a time. Delayed data delivery, on the other hand, usually affects many at once. This situation can gnaw at morale, productivity and revenue. Yet users typically endure slowdowns in silence. And when they finally complain, callers can only vent their frustration through colorful similes. A printable example would be, "The network is running as slow as interoffice mail."

More common is the succinct, "It's running like ...."

#### LINE OF DEFENSE

Now end users and department managers can look below the surface if they are dissatisfied with service from their IS group. They can arm themselves with shareware management tools and troubleshooting products from bulletin

boards, newsgroups and World Wide Web sites.

For example, Net.Medic from Vital-Signs Software in Santa Clara, Calif., attaches to a Web browser to graphically reveal the performance of each aspect of a user's session. It identifies latency in the user's PC and modem, through the Internet service provider and at the target Web or intranet server.

Major management vendors are empowering users, too.

Candle Corp. in Santa Monica, Calif., this month will launch the ETEWatch line of tools in versions for individual users or administrators. Each measures the responsiveness of specific applications involving Lotus Notes, SAP R/3 and Web browsers.

And nearly every vendor of monitoring and management tools for IS gurus has Web-enabled its software. Anyone inside the organization's firewall can read reports on the availability and performance of interconnecting gateways, servers and business-critical applications.

So get ready for savvy users to call the help desk. They will report that the branch-office router is dropping packets or that the E-mail gateway to Europe has been down for two hours.

Instead of groping for a descriptive simile, they will say, "The Web server in the marketing department is responding 80% slower today than its baseline performance over the past month."

When users can speak knowledgeably

about performance, the gurus can't hide behind technobabble and promise to throw more bandwidth at a problem.

A responsible IS group will lead the way in defining service level expectations. And then it will stay a step ahead through sensitive monitoring and careful capacity planning. □

Dryden is Computerworld's senior editor, network and systems management. In a prior life, he paid his dues in telephone support, field service and training. You can send him your user stories at [patrick\\_dryden@cu.com](mailto:patrick_dryden@cu.com).



**Marty Becton**, technology coordinator at Tipton County Schools in Covington, Tenn., which has 9,000 users:

"To save time and management dollars, we've gone to deploy Novell's new Border Manager with the built-in Cyber Patrol content filtering technology from Microsym Software, Inc. Novell's Internet/intranet services initiative has given me renewed confidence in them and should help them to compete with Windows NT. Using Novell Directory Services is like adding fire or air network administrators and lets me easily and centrally manage all 10 school sites. I couldn't do that with Windows NT now. □

### 3-TO-4 PM HAS BECOME A FIGHTING TIME FOR CITY PARENTS.

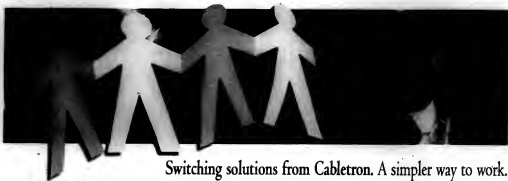


Because there wasn't enough after-school programs. So their kids are exposed to the temptations of the street. Join the Urban League to keep your programs going. Call toll free 1-800-326-YOUTH.

TIME TO MEET THE STREET.



Remember when stringing together a few users didn't require a PhD in rocket science? We do.



## Switching solutions from Cabletron. A simpler way to work.

As a network manager, your work is cut out for you more than ever before. To maintain router-based networks, you must painstakingly reconfigure them for every add, move or change. The more your network evolves, the heavier your workload.

Here's a new school of thought: switch-based networking from Cabletron. Cabletron's SmartSwitches allow you to automatically configure workgroups on the fly, with built-in support for the only connection-oriented switching solution in the industry—SecureFast. With SecureFast's point-and-click management applications, the time-consuming task of configuring your network has all but been eliminated, even across multiple protocols, not just IP.

What's more, with Layer 3 switching services embedded into each SmartSwitch, only the first packet is routed. All subsequent packets are switched, providing increased throughput and performance to keep pace with your growing reliance on distributed client/server applications, multimedia and, of course, the ever-present Web.

Make the smart switch to Cabletron. It's the simpler way to ease your workload and trim network costs. Call (603) 337-0930 for more information or visit us on the Web at [www.cabletron.com](http://www.cabletron.com).



# CABLETRON systems

The Complete Networking Solution™

New York Stock Exchange—Listed (CS)

# The Internet

The World Wide Web • Intranets • Online Services

## Briefs

### 'PUSH' APPLICATION

## Firm keeps callers off hold

By Justin Hibbard

A MIDSIZE teleconferencing company such as Conference Plus, Inc. can't compete with the likes of ATRT Corp. without taking some chances.

And that's what the Schaumburg, Ill., company did when it gambled on "push" technology — dismissed as a fad by some critics — for one of its most critical applications.

Conference Plus coordinates conference calls. To distinguish itself from larger competitors such as AT&T, MCI Communications Corp. and Sprint Corp., the company concentrates on offering top-notch customer service. Doing so requires all 300 employees — from the presi-

dent on down — to track how long customers are on hold.

The company last year replaced its Centrex telephone system from Nortel, Inc. with a Fujitsu America, Inc. 9600 Automated Call Distribution (ACD) switch for queuing incoming calls. But when the company tore out the old system, top managers lost the ability to monitor the level of calls in real time from their desktop PCs.

"I started getting into the installation of the ACD and realized that we were going to take a tool away from the president of our company that he really liked," said John Bogerts, senior manager of information systems. *Push, page 63*

## Engine links ads to users' searches

By Mitch Wagner

INFOSEEK CORP. last week started an innovative service designed to more closely target advertising on its search engine to users' interests by keeping track of every search that a user makes.

The service uses neural network technology from Aptex Software, Inc. in San Diego to observe all the searches users run every time they visit the Infoseek search engine. It also calculates a single numeric value, or "vector," that describes users' interests. Infoseek uses that information to match users to ads, but Aptex is betting that other commercial World Wide Web sites will use its technology to build up the usefulness of their sites or drum up repeat business.

"I'm very positive about it," Search engine, page 63

### REVIEW Off-line browsers

## Web retrievers go beyond fetching

By Lenny Bailey

NETSCAPE NAVIGATOR may permit you to bundle a single page with attached graphics in an electronic-mail attachment, but what if you want to save a whole lot more?

Many users may want an entire corporate site with product information, executive profiles, tabular statistical information and technical support pages with

hyperlinked cross-references. Or they may want a news magazine with a table of contents and nested feature stories.

Traveling Software, Inc.'s WebEx 2.0 and DataViz, Inc.'s Web Buddy 1.1 are upgrade packages that allow an enterprise to selectively retrieve and share that type of World Wide Web site content. Both products provide a convenient, folder-based system for organizing

and storing Web archives. They can pull subscribed sites off the Internet at designated intervals and publish them in folders that co-workers can share.

But WebEx and Web Buddy lack the capability of Tympani Development, Inc.'s NetAttache Enterprise Server [CW, March 27] to publish any document for access via any Web browser. They are less-expensive tools that are limited to network char-

Shopped up, page 65



Web Buddy is well-suited to service users who want to grab a Web page and run



WebEx's interface makes it easy to capture single pages or entire Web sites

15%

21%

29%

81%



# The Internet

The World Wide Web • Intranets • Online Services

## Briefs

### Web-based groupware

Cambridge, Mass.-based Rad-net, Inc. is shipping WebShare 2.0, World Wide Web-based groupware that includes a new application designer and also supports replication. The company is offering a special price of \$6,195 until June 19 for WebShare Server for Windows NT, WebShare Designer, the application development tool, costs \$995.

### E-mail upgrade

Capetown, Calif.-based Net-Manager, Inc. is shipping Z-Mail Pro 6.1, an upgrade of its Internet mail client that has enhanced support for Internet Message Access Protocol 4 and in-line Hypertext Markup Language browsing. The software runs on Windows 3.1, Windows 95 and Windows NT. It costs \$79 per copy.

### DHL builds firewalls

DHL Worldwide Express last week announced it will deploy approximately 60 Cisco Systems, Inc. PIX Firewalls to enable secure access to the Internet from about 40 DHL sites around the world. The San Jose, Calif. vendor's PIX Firewall is a stand-alone hardware/software package that is designed to work only as a firewall.

### 'PUSH' APPLICATION

## Firm keeps callers off hold

By Justin Hibbard

A MIDSIZED teleconferencing company such as Conference Plus, Inc. can't compete with the likes of AT&T Corp. without taking some chances.

And that's what the Schaumburg, Ill. company did when it gambled on "push" technology — dismissed as a fad by some critics — for one of its most critical applications.

Conference Plus coordinates conference calls. To distinguish itself from larger competitors such as AT&T, MCI Communications Corp. and Sprint Corp., the company concentrates on offering top-notch customer service. Doing so requires all 200 employees — from the pres-

ident on down — to track how long customers are on hold.

The company last year replaced its Centrex telephone system from Nortel, Inc. with a Fujitsu America, Inc. 9600 Automated Call Distribution (ACD) switch for queuing incoming calls. But when the company tore out the old system, top managers lost the ability to monitor the level of calls in real time from their desktop PCs.

"I started getting into the installation of the ACD and realized that we were going to take a tool away from the desktop of our company that he really liked," said John Bogarts, senior manager of information

Push, page 53

### REVIEW ▶ Off-line browsers

## Web retrievers go beyond fetching

By Leney Bailes

NETSCAPE NAVIGATOR may permit you to bundle a single page with attached graphics in an electronic-mail attachment, but what if you want to save a whole lot more?

Many users may want an entire corporate site with product information, executive profiles, tabular statistical information, and technical support pages with

hyperlinked cross-references. Or they may want a news magazine with a table of contents and nested feature stories.

Traveling Software, Inc.'s WebEx 2.0 and DataViz, Inc.'s WebBuddy 1.1 are upgrade packages that allow an enterprise to selectively retrieve and share that type of World Wide Web site content. Both products provide a convenient, folder-based system for organizing

and storing Web archives. They can pull subscribed sites off the Internet at designated intervals and publish them in folders that co-workers can share.

But WebEx and WebBuddy lack the capability of Tympanum Development, Inc.'s NetAtch Enterprise Server (EN, March 17) to publish any document for access via any Web browser. They are less-expensive tools that are limited to network stoa-

Stopped-up, page 65

## Engine links ads to users' searches

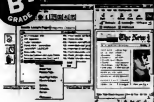
By Mitch Wagner

INFOSEEK CORP. last week started an innovative service designed to more closely target advertising on its search engine to users' interests by keeping track of every search that a user makes.

The service uses neural network technology from Apex Software, Inc. in San Diego to observe all the searches users run every time they visit the Infoseek search engine. It also calculates a single numeric value, or "vector," that describes users' interests. Infoseek uses that information to match users to ads, but Apex is betting that other commercial World Wide Web sites will use its technology to build up the usefulness of their sites or drum up repeat business.

"I'm very positive about it," Search engine, page 63

OVERALL  
B-  
GRADE



Web Buddy is well-suited to novice users who want to grab a Web page and run

OVERALL  
B-  
GRADE



WebEx's interface makes it easy to capture single pages or entire Web sites

15%

21%

29%

81%



Improve your performance with: Single 266MHz Pentium® II processor or single 200MHz Pentium Pro processor, upgradable to dual Pentium Pro processors. Up to 1GB of maximum memory. 16X max (variable speed) CD-ROM drive. 2D Matrox Millennium graphics card or Intergraph Intense3D Graphics Pro 1000/T card.

Yes, tell me how IntelliStation can help me do what I do best.

Name

Title or Position

Company Name

Address

City

Phone Number

State

Zip

E-mail Address

Nature of business:

- ☐ Advertising/Marketing  
☐ Digital Content Creation/Visual Media  
☐ Electrical Engineering/Design  
☐ Financial Services  
☐ Mechanical Engineering/Design  
☐ Software Engineering/Design  
☐ Other

No. of workstations in your company:

- ☐ 1-10 ☐ 11-50 ☐ 51-100  
☐ 101-500 ☐ 500+

No. of workstations you intend to purchase in the next 12 mos.:

- ☐ 1-10 ☐ 11-50 ☐ 51-100  
☐ 101-200 ☐ 201-500 ☐ 500+

Hardware used:

- ☐ IBM ☐ HP ☐ SUN ☐ SGI  
☐ Compaq ☐ Mac ☐ Digital ☐ Other

Operating System:

- ☐ Mac ☐ Windows 95  
☐ UNIX ☐ Windows NT ☐ Other



NO POSTAGE  
NECESSARY IF  
MAILED IN THE  
UNITED STATES



**BUSINESS REPLY MAIL**

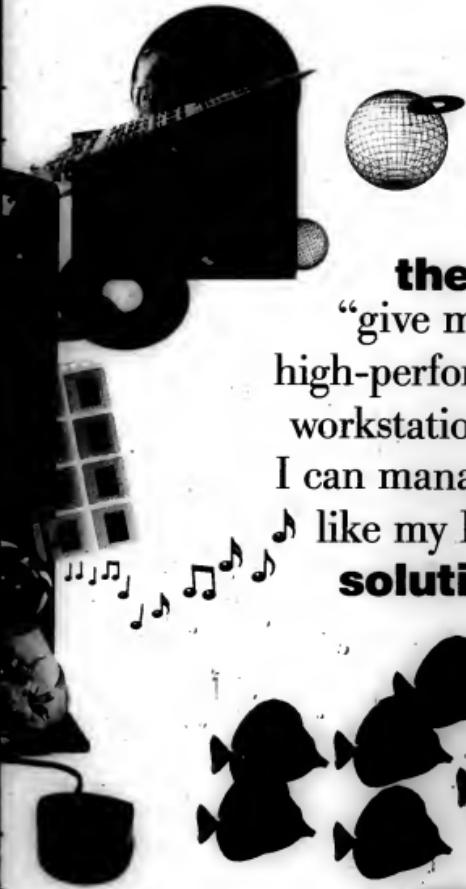
FIRST-CLASS MAIL PERMIT NO. 36 HOLLISTON, MA

POSTAGE WILL BE PAID BY ADDRESSEE

**IBM**

PO Box 6100  
Holliston MA 01746-9814





Introducing the  
IBM IntelliStation.  
A graphics workstation  
and powerful PC  
all in one.

the  
“give me a  
high-performance  
workstation that  
I can manage just  
like my PCs”  
solution

Imagine, a high-end workstation that can be easily integrated into your existing Windows NT® or mixed environment. That's the IBM IntelliStation™. You can install it in a snap. And thanks to industry-leading manageability features including IBM's Wake on LAN®, you can install and upgrade software and provide support over the LAN from one central location. Saving time. And saving money. IntelliStation gives your users both top-of-the-line graphics and PC functionality. With Windows NT versions of the industry's most advanced applications, users can execute 2D and 3D technical graphics. And simultaneously on the same screen, they can write letters, send e-mail and access the Internet, sharing their ideas over your LAN, throughout the country and the world. With your choice of Intel® 266MHz Pentium II or up to two 200MHz Pentium Pro processors and up to 1GB of memory, they'll have all the power they need. So call the number below or visit our Web site at [www.pc.ibm.com/intellistation/info](http://www.pc.ibm.com/intellistation/info). The IBM IntelliStation. Your designs will look phenomenal. So will your bottom line.

IBM IntelliStation.  
Nothing gets in the way  
of a good idea.

Call 1 800 426-7255 ext. 5140.

**IBM.**  
Solutions for a small planet.

With discrete internal disk speed of the microprocessor only; other factors also affect application performance. IBM, IntelliStation and Wake on LAN are trademarks or registered trademarks of International Business Machines Corporation. The Intel Inside logo and Pentium are registered trademarks of Intel Corp. Microsoft, Windows NT and the Windows NT logo are trademarks or registered trademarks of Microsoft Corporation. Other company, product and service names may be trademarks or service marks of others. © 1997 IBM Corp. All rights reserved.

**It's the  
most powerful  
desktop PC we've  
ever offered.**

**Actually, it's  
the most powerful  
desktop PC anyone's  
ever offered.**

**NEC PowerMate Professional**

- Intel Pentium II Processor  
233 or 266MHz
- 32MB or 64MB EDO RAM  
standard/expandable to 256MB
- 3.2GB Enhanced IDE Drive or  
4.7GB Ultra Wide SCSI hard drive
- 64-bit PCI accelerated  
2D and 3D graphics
- Microsoft Windows NT or  
Microsoft Windows 95
- Intel LANDesk Client Manager
- NEC MagicEye technology
- 3-year limited warranty

We could compare the NEC PowerMate® Professional to ordinary desktops, but that wouldn't be fair. Enhanced by Intel's Pentium® II processor,\* the PowerMate desktop is in a class all its own. Of course, we're not simply saying that our new system is extraordinarily powerful. It's extraordinarily manageable as well. With Intel LANDesk® Client Manager and NEC MagicEye™ technology, you'll not only be able to access every desktop throughout your network, you'll also be able to monitor problems before they happen. All without leaving your desk. For greater flexibility, there are Microsoft Windows

NT® 4.0 or Windows® 95 models. Given all this, you'll be glad to know that the highest performing PC is available now. Just call 1-888-306-4636 for more information or to find your nearest reseller. After all, how can businesses demand speed and efficiency from their people if they can't get it from their computers?



©1997 NEC Computer Systems Division. Pentium and NEC are registered trademarks of NEC Corporation, both used under license. The Intel Inside logo, LANDesk and Pentium II are registered trademarks and MMX is a trademark of Intel Corporation. All other trademarks or registered trademarks are property of their respective owners. \*Intel's 266MHz Pentium II delivered the highest performance based upon PC Mark 97-97 article on average PC.

Visit our web site at [www.nec-computers.com](http://www.nec-computers.com)

**NEC**

# 'Push' helps firm keep callers off hold

CONTINUED FROM PAGE 55

systems at Conference Plus.

The ACD switch comes with software to monitor calls, but adding extra client licenses was too expensive, Bogarts said. He said he also considered tote boards, which display scrolling messages across a bank of LEDs and cost about \$50,000 each.

Finally, Bogarts took a chance on new technology. He spent \$5,000 on a 100-user license for Incisa push software from Wayfarer Communications, Inc. in Mountain View, Calif.

The ACD software sends data about the number of callers and how long they have been waiting to the Incisa server through DataBridge, Incisa's application programming interface.

The server receives data from the switch in real time and pushes it over the corporate intranet to Incisa clients on users' desktops.

The client software displays the number of customers on hold and the longest time any customer has been on hold. If a

customer holds for longer than a minute, managers assign more employees to the phone.

Conference Plus averages 15 seconds of hold time for each of the 2,500 calls it fields each day. Its competitors average 45 seconds, Bogarts said.

"These kinds of tools help differentiate us from our competitors," he said.

## IN-YOUR-FACE TECHNOLOGY

The company is one of the first to base such a critical application on push technology, which isn't without its critics.

"I think push technology is a fad, and it's in-your-face technology," said Jim Bain, an analyst at Gartner Group, Inc. in Stamford, Conn.

Bain said push products such as PointCast from PointCast, Inc. in Cupertino, Calif., were designed for users, such as stock brokers, who need to monitor the news. But the constant stream of information is too invasive for most knowledge workers, he said.

But Bogarts insisted that necessity—not hype—drove his decision to use push technology, also called webcasting.

"Everybody's enamored with webcasting," Bogarts said. "But I just justified it off a straight business need."

The cost of Incisa beat tote boards, the

nearest alternative, by \$5,000, Bogarts said.

And the company's chief end user, President and CEO Rick Revere, said he likes the system.

"As things become more automated, it becomes more difficult to have visibility into what's going on in your business," he said. "This technology cuts right through and allows us to get right back into the heart of our business again." □

# Search engine targets ads

CONTINUED FROM PAGE 55

said David Yoder, media director at Anderson & Lemble, an advertising agency in San Francisco. The agency plans to test the Ultramatch service for its clients, including Microsoft Corp. "The concept is that you're using behavior graphics instead of psychographics, and that helps the advertiser target the ad much more effectively," Yoder said.

Infoseek's service is an attempt to harness the Internet for one-to-one marketing. Infoseek is just one example of an electronic-commerce Web site that

uses customizing software to track user behavior and predict what a user will be interested in seeing in the future. Other sites use customizing software to present investment information or to boost sales of goods and services online.

The Internet's ability to function as a micromarketing channel has been much-hyped, but most ad-based Web sites fail to take advantage, using ad-display methods adapted from print media. They charge based on an ad's size, position or number of "impressions"—the number of times the ad is displayed.

Apex is making the software used in Ultramatch, called SelectCast for Ad Servers, available to other companies. Apex also has a version of the software designed for sites that sell products and services online. SelectCast for Commerce Servers analyzes customer buying pat-

terns and displays products and services the customer will be likely to buy, based on past behavior. Both products are available now. Apex officials wouldn't discuss pricing.

Apex's technology joins several products on the market designed to customize users' views of Web sites based on previous user behavior or information supplied by the user during registration. Competitors include BroadVision, Inc. in Los Altos, Calif., and Firefly Network, Inc. in Cambridge, Mass.

Apex officials said the company's products differ from competitors in that they don't require users to register, which is more convenient for the user and preserves the user's privacy. Many users dislike registration sufficiently to stay away from sites that require it.

But some users and vendors defended registration.

Martin Nisenholtz, president of The New York Times Electronic Media Co. in New York, said registering users delivers the best value for advertisers. Advertisers can target ads based on geographical location or income, which Ultramatch doesn't permit.

"If you're selling convertibles, and you want to target people in warm climates who are making a certain amount of money, we can target only people in certain parts of the country," Nisenholtz said.

Registration also ensures that the user knows he is being watched.

"It's very important for the user to understand what benefits the site offers and to be part of the process," said Saul Klein, vice president of marketing at Firefly. □

Users click on Web ads placed at the bottom-right corner of a screen 2-64% more often than ads at the top of the screen, according to Athena Associates in Ann Arbor, Mich.

ALIVIA FIREWALL & TUNING  
© 1997

Year 2000, a.k.a. The  
Immovable Deadline. It could  
cost millions in man-hours  
and lost revenues. Unless  
you have EMC Enterprise  
Storage.™ Because EMC Enterprise  
Storage helps you become Year  
2000 compliant without pro-

tracted business interruptions.  
Our solutions can maintain  
completely separate production  
and test data simultaneously.  
This will allow you to validate  
your Year 2000 solution with

real information, without  
putting your business at  
risk. To find out how EMC  
Enterprise Storage can help  
solve the biggest IT crisis ever  
and upgrade the performance of

**Not Without  
EMC Enterprise  
Storage  
You Won't.**

your entire system during and  
after the project, visit our Web  
site at [www.emc.com](http://www.emc.com) or call  
1-800-424-EMC2, ext. 363.

**EMC<sup>2</sup>**  
The Enterprise Storage Company

# Will You Survive Year 2000?



Can your company become Year 2000-compliant in time?  
If you take a triage approach, you can do so—at a price.

Client/Server Computing, January 1997

# Stepped-up Web site retrievers do more than just fetch

CONTINUED FROM PAGE 35

ing of HTML documents. Each workstation can run a local copy of the site retriever and Netscape Communications Corp.'s Navigator or Microsoft Corp.'s Internet Explorer to view downloaded Web materials.

Although WebEx 2.0 and Web Buddy 1.1 lack the elegance of a single-server utility that supports an entire enterprise, they do permit each member of a team to

on previously retrieved and archived Web materials—an advantage it shares with Quarterdeck, Inc.'s Web Compass and one that competitors Web Buddy and NetAttache Pro lack.

WebEx lets users share Web sites they have downloaded by exporting them into an HTML directory structure that can be edited. Testing of this version demonstrated that you can successfully retrieve and display multiframe pages, client- and server-side image maps and embedded Macromedia, Inc. Shockwave and Apple Computer, Inc.'s QuickTime multimedia. I met with partial success retrieving Java applets and pages constructed with JavaScript. Simple client-side Java applications came through fine; more complex links presented problems.

DataViz's Web Buddy 1.1 is simpler to use than WebEx 2.0 and well-suited to novice users who want to grab a Web page and run. It is compatible with Netscape Communicator 4.0 and Internet Explorer 4.0, which makes it possible to grab and view pages formatted with dynamic HTML extensions. I could capture dynamic font display but not object-layering and special pop-up effects.

Web Buddy has a simple tool bar that automatically appears when you start your browser. When your browser visits a page that you would like to keep, you click on the "Page to Go" or the "Site to Go" icon on the Web Buddy tool bar. To display a list of all the groups/categories of pages you've retrieved, click the Web Buddy General icon, which displays the categories in a tabbed window. As with WebEx, you can create a shared category of downloaded Web sites or bookmarks available to anyone running a copy of the site retriever on another network client.

Web Buddy can export archived site material back into HTML files and individual graphics for E-mail distribution, but it is a bit less accurate than WebEx. You'll probably export all the basic HTML code and accompanying bit-map files, but Web Buddy may miss items such as embedded Java applets and multimedia

files. Web Buddy doesn't have built-in support for search-engine queries and automatic result retrieval. But its interface is extremely intuitive; as a bonus, DataViz has included some of its conversion filters. HTML code and embedded graphics can be transformed into Microsoft Corp.'s Word, Microsoft Word and WordPerfect formats for distribution to your non-browser-enabled colleagues.

If you regularly peruse Internet sites

for news or financial information, either of these packages may prove to be a valuable time-saver in your office. Trial versions of WebEx 2.0 and Web Buddy 1.1 can be downloaded from their company Web sites for evaluation ([www.travsoft.com](http://www.travsoft.com) and [www.dataviz.com](http://www.dataviz.com)).

Buller is freelance writer/journalist in San Francisco. He can be reached at [levnyb@dig.net](mailto:levnyb@dig.net).

## REVIEW ▶



**WebEx 2.0**  
Traveling Software  
Bethell, Wash.  
Price: \$49.95



**Web Buddy 1.1**  
DataViz  
Trumbull, Conn.  
Price: \$49

scour the Internet independently.

WebEx 2.0 also includes an integrated search function: Users can compose off-line queries for live search engines and collect a results index and site entries.

WebEx 2.0 is a substantial upgrade to the year-old Version 1.0. Its page-retrieval features and application programming interface have been reworked to make the product competitive with other utilities in this category.

The interface makes it easy to capture individual pages or whole Web sites. You can flip through a tree display of downloaded Web materials and view them in the Site Manager, or you can display Web pages in your browser of choice.

WebEx 2.0 integrates scheduling and search features that will let you go online at designated intervals and submit Common Gateway Interface forms or search queries that have been composed off-line. It also can perform off-line searches

## NEW PRODUCTS

**ASCEND COMMUNICATIONS, INC.** has announced Pipeline 1.1, a terminal adapter that provides high-speed dial-up access to an Intranet or the Internet.

According to the Alameda, Calif., company, the adapter supports Dynamic Bandwidth Allocation to automatically add or subtract bandwidth based on demand.

Pipeline 1.1 costs \$450.  
Ascend Communications  
(800) 478-9564  
[www.ascend.com](http://www.ascend.com)

**E CORP.** has announced EMail 97, electronic-mail software for use on the Internet.

According to the Pittsburgh company, EMail 97 has full two-way pager support, so a user can receive compressed messages to a pager in real time. It uses EIntelligence, software that creates shortcuts based on a user's repeated actions. It costs \$59.95.

E Corp.  
(412) 921-0900  
[www.e-corp.com](http://www.e-corp.com)

Put the power of AltaVista™ Search to work on your PC with AltaVista Search Personal! A maximum for only \$29.95! Or, get a handle on all your corporate knowledge with the AltaVista Search Enterprise Pack—another search power for 250 users for just \$15,995! For OnSite Computing wherever you are, call one of our Business Partners today.

**WYLE**  
(800) 332-6945

**MidAge**  
(800) 814-3305

©1997 Wyle Systems, Inc. All rights reserved. AltaVista is a registered trademark of Digimarc Corporation.

**AltaVista** Search

©1997 Wyle

# The SAS



Data Mining Solution

# Discover the Diamonds in Your Data Warehouse

Introducing the first-ever, fully integrated data mining solution...one that maximizes your return on investment in data warehousing and data marts—as decision makers exploit your customer data for competitive advantage.

SAS Institute, for 20 years the leader in data discovery, provides the most complete and reliable data mining solution for modeling, measuring, and enhancing the profitability of your business. This Web-enabled, point-and-click approach lets you employ OLAP, neural networks, churn analysis, and other analytical and visualization techniques to improve customer retention, target key prospects, profile market segments, detect fraud, analyze customer response, and much more.

## *Begin Your Discovery with our Free Web-Integrated CD ROM*

*Digging for Diamonds: The SAS® Solution for Data Mining* lets you explore data mining from both a business and an IT perspective. And it's linked directly with our World Wide Web site, so you can continue to make new discoveries and gain fresh insights.

To request your copy, visit SAS Institute at [www.sas.com/datamining/](http://www.sas.com/datamining/) or give us a call.



**SAS Institute Inc.**

**The Business of Better Decision Making**

# ORTUNE

## HUNDRED

The better returns are...

10 of the top 10 Fortune 100 corporations with the highest value use SAP software.

10 of the top 10 Fortune 100 corporations with the highest growth use SAP software.

10 of the top 10 Fortune 100 corporations with the highest earnings use SAP software.

10 of the top 10 Fortune 100 corporations with the highest returns on assets use SAP software.

10 of the top 10 Fortune 100 corporations with the highest returns on revenues use SAP software.

10 of the top 10 Fortune 100 corporations with the highest growth in earnings per share use SAP software.

For more information on how the best Fortune 100 corporations run better, visit us at <http://www.sap.com> or call 1-800-283-1SAP.



A Better Return On Information.™

# Corporate Strategies

Case Studies • Trends • Outsourcing

## Briefs

Client spending on  
year 2000 resolution  
services



Source: Strategy Analytics Inc., Walnut, N.J.

## Data warehouse, the sequel

► Sears opens decision support to business users

By Thomas Hoffman  
Phoenix

OK, SO YOU have had a data warehouse installed for a couple of years, and your company's top brass is better-equipped to identify key sales and customer buying habits. Now what?

For Sears, Roebuck and Co., the answer comes in taking an established data warehouse to a new level of understanding customers' behavior, in part by making the information accessible to more business users.

The Hoffman Estates, Ill.-based retail giant is overhauling its first financial data warehouse used for planning, forecasting and reporting.

### CASE OF MEASUREMENT

Sears is revamping its Enterprise Planning and Information Center (EPIC) system to make it easier for merchandisers, accountants and other users to measure performance, in terms of sales and other business metrics, against the retailer's plans.

For example, one of the new requirements for Sears' 3-year-old environment is a spread-

sheet front end that will let financial planners manipulate data in a familiar way. Queries for the data warehouse will continue to run via Arbor Software Corp.'s Esbase software running on an Informix Corp. database management system.



The spreadsheet front end is an important enhancement,

said Ryan Leary, a senior manager at Sears. "MBAs spent 90% of their time searching for data," Leary said.

In the past three years, Sears' merchandisers looked only at merchandising information, while the retailer's bean counters would study nothing but fi-

nanacial data. But Leary said there is increasingly more overlap between those two groups and their needs to look at each other's data.

Leary and her staff believed Sears should depart from its "silo structure" of data warehouses for individual business units and open up EPIC to a wider audience.

To help gain approval and funding for EPIC's coming-out party from Sears Chairman Arthur Martinez, Leary and her staff presented a "spaghetti chart" that illustrated how jumbled the retailer's reporting systems are, along with a second,

more simplified chart that showed how an integrated reporting system would streamline operations.

The confusing graphic worked. "We got the funding," said Leary.

who said she expects her crew to have EPIC's core financial data available to its financial planners by year's end.

One of the biggest obstacles Sears faced in opening EPIC to

Warehouses, page 72

### YEAR 2000

## Staring down the deadline

By Julie King

JUST 18 MONTHS after launching its most labor-intensive software project in a decade, Delta Health Systems in Allentown, Pa., is in a position thousands of other companies only wish they were in.

All of Delta's 5,900 computer programs have been reviewed and recoded for the year 2000 date change. That is about 1 million lines of code, which are now being tested for rollout to Delta's health care customers

Year 2000, page 72

We haven't seen  
(data warehousing)  
costs shrink

## Switching system deals casino a winning hand

By Bob Wallace

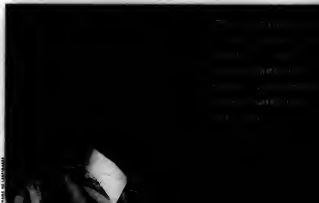
IT'S ALL in the cards at the Rio Suite Hotel & Casino.

The 2,000-room Las Vegas establishment is completing the LAN switching foundation it began laying roughly two years ago to support use of all-purpose electronic "game" cards.

Rio has built a system that lets it track and reward its top spenders, and a point-of-sale (POS) system lets those gamblers use one card, be it at a poker table, hotel restaurant or bar.

And the hotel/casino has also installed a \$1 million network that lets guests conduct business from computers in their rooms. Next up is a World Wide Web site that will let guests

Switching, page 72





# Corporate Strategies

Case Studies • Trends • Outsourcing

## Briefs

Client spending on year 2000 resolution services



\*Projected  
Source: Investors Capital Group, Inc., Hingham, N.J.

### IT firms merge

The Registry, Inc. in Newton, Mass., plans to merge with Renaissance Solutions, Inc. in Lincoln, Mass., in a stock swap valued at approximately \$430 million. Officials said the combined firm will have revenue of more than \$550 million and provide services ranging from strategic consulting to business solutions and technology implementation.

### LaSalle hires IBM

LaSalle Partners, a Chicago-based real estate investment firm, has hired IBM to enhance its information technology infrastructure and manage its international client/server environment. The contract includes administration of LaSalle's voice and data network and 15,000 desktop machines and the creation of a single-point-of-contact help desk in IBM's data center in Rochester, N.Y. Financial terms of the agreement weren't disclosed.

### CUC buys software

CUC International, Inc., owner of one of the largest home-shopping sites on the World Wide Web, has purchased two software companies: Berkeley Systems, Inc., maker of the popular After Dark screen saver; and Books that Work, which makes landscape and gardening software. CUC bought Berkeley Systems in Berkeley, Calif., and Books that Work in Palo Alto, Calif., last month. CUC in Stamford, Conn., owns HotMarket, a home-shopping Web site.

## Data warehouse, the sequel

► Sears opens decision support to business users

By Thomas Hoffman  
PHOENIX

OK, so you have had a data warehouse installed for a couple of years, and your company's top brass is better equipped to identify key sales and customer buying habits. Now what?

For Sears, Roebuck and Co., the answer comes in taking an established data warehouse to a new level of understanding customers' behavior, in part by making the information accessible to near business users.

The Hoffman Estates, Ill.-based retail giant is overhauling its first financial data warehouse used for planning, forecasting and reporting.

### EASE OF MEASUREMENT

Sears is retooling its Enterprise Planning and Information Center (EPIC) system to make it easier for merchandisers, accountants and other users to measure performance, in terms of sales and other business metrics, against the retailer's plans.

For example, out of the new requirements for Sears' 3-year-old environment is a spread-

sheet front end that will let financial planners manipulate data in a familiar way. Queries for the data warehouse will continue to run via Arbor Software Corp.'s Exbase software running on an Informix Corp. database management system.



The spreadsheet front end is an important enhancement, said Ryan Leary, a senior manager at Sears. "MBAs recent spending 90% of their time searching for data," Leary said.

In the past three years, Sears' merchandisers looked only at merchandising information, while the retailer's bean counters would study nothing but fi-

nancial data. But Leary said there is increasingly more overlap between those two groups and their needs to look at each other's data.

Leary and her staff believed Sears should depart from its "solo structure" of data warehouses for individual business units and open up EPIC to a wider audience.

To help gain approval and funding for EPIC's coming-out party from Sears Chairman Arthur Martinez, Leary and her staff presented a "spaghetti chart" that illustrated how jumbled the retailer's reporting systems are, along with a second,

more simplified chart that showed how an integrated reporting system would streamline operations.

The confusing graphic worked. "We got the funding," said Leary.

who said she expects her crew to have EPIC's core financial data available to its financial planners by year's end.

One of the biggest obstacles: Sears faced in opening EPIC to Warehouses, page 72



Delta Health's Jim Wagner

YEAR 2000

## Staring down the deadline

By Julia King

JUST 18 MONTHS after launching its most labor-intensive software project in a decade, Delta Health Systems in Allentown, Pa., is in a position thousands of other companies only wish they were in.

All of Delta's 5,900 computer programs have been reviewed and recoded for the year 2000 date change. That is about 1 million lines of code, which are now being tested for rollout to Delta's health care customers.

Year 2000, page 72

## Switching system deals casino a winning hand

By Bob Wallace

IT'S ALL IN the cards at the Rio Suite Hotel & Casino.

The 2,000-room Las Vegas establishment is completing the LAN switching foundation it began laying roughly two years ago to support use of all-purpose electronic "game" cards.

Rio has built a system that lets it track and reward its top spenders, and a point-of-sale (POS) system lets those gamblers use one card, be it at a poker table, hotel restaurant or bar.

And the hotel/casino has also installed a \$1 million network that lets guests conduct business from computers in their rooms. Next up is a World Wide Web site that will let guests

Switching, page 72



"The systems would have crushed an ordinary LAN infrastructure. But by building a switched foundation... we can add applications without bandwidth concerns."

AME, PERRO  
RIO HOTEL & CASINO

When a company is synonymous with the Web, it needs servers that are synonymous with unstoppable.


Which explains why Netscape™ Communications chooses 64-bit DIGITAL AlphaServer™ systems to help handle the 135 million hits its Web site receives daily. Ultra-reliable AlphaServers are also Netscape's primary backup *The Webmaster's Prayer* system—because netscape.com

simply can't afford to be down. Sheer  muscle isn't the whole story, though.

**May your content be hot.**

**Your graphics be cool.**

**And your servers be DIGITAL.**

Scalability counts, too. Witness AltaVista™  Internet Software, where AlphaServers run the definitive Web search site. Zero to 30 million hits a day, in just 16 months. Plus the herculean task of indexing the entire, ever-expanding World Wide Web. All gracefully accommodated by the flexible, expandable power of Alpha. From servers to software, from networks to global, 24-hour support, DIGITAL delivers total Internet and intranet solutions. In any size, with unlimited room to grow. Call 1-800-DIGITAL, ext. 325, or surf to [www.ads.digital.com/web](http://www.ads.digital.com/web), and make the DIGITAL edge your own. Or sing the Webmaster's Lament: "Gee, I guess we should have gone with DIGITAL."

**digital™**  
Whatever it takes.™



## Switching system

CONTINUED FROM PAGE 48

reserve rooms online and buy from Rio's shops and outlets.

The demand for all those new systems would have dealt Rio's network a lasting hand.

"The systems would have crashed an ordinary LAN infrastructure," said James Ferry, MIS network manager at Rio, which is a Cisco Systems, Inc. shop.

But by building a switched foundation comprising switched Ethernet, Fast Ethernet and ATM, we can add numerous applications without bandwidth concerns," he said.

Under Rio's system, when a customer swipes a card through

**"ATM has driven down response time on 'trouble' calls. And we can send video of 'problem' players to other casinos, if necessary."**

— Jim Terry, Rio Suite Hotel & Casino

a gambling machine card reader, the amount spent is sent over a LAN segment recorded on a server. The same holds true for meals, drinks and many other purchases.

"It's absolutely essential that we track who our best players are and how much they spend so we can reward them with complimentary rooms, flights, meals and so on," Ferry said. "It's the casino's version of taking care of its customers."

That is done by issuing players points that can be redeemed for dollars they spend. Analysts

pointed out that the practice isn't new — Rio has done it for almost two years — but agreed with Ferry that it is exceptional.

Rio's use of Asynchronous Transfer Mode (ATM) to help pit bosses resolve conflicts at gaming tables would make James Bond proud.

In the past, if a dispute arose, the pit boss had to hunker up to the surveillance room, pop the tape out of one of the 300-plus VCRs in use, review it and head back down to the floor with a ruling.

With ATM, video from the surveillance cameras is piped down to the pit where the ruling is made. The ATM system has displaced the VCRs and tapes.

"ATM has driven down response to other casinos," said Jim Terry, surveillance manager at Rio. "The process is streamlined now, and we can send video of 'problem' players to other casinos, if necessary."

It is expected that ATM will prove cheaper in the long run.

**ATM OVER FAST ETHERNET**  
ATM also is used to support "video walls" and multimedia events throughout the property. It was chosen over 100M bit/sec. Fast Ethernet because it lets users set qualities-of-service per bandwidth chunk, Ferry said. That means information systems managers can set performance parameters for the band-

width that specific applications use. That capability isn't supported by Fast Ethernet.

Hospitality industry analysts said video is coming on strong at casinos.

"Most of the newer casinos are using it for surveillance because it saves on personnel costs," said Dennis Rudd, director of hospitality management at Robert Morris College in Pittsburgh and a former hotel manager and owner. "It's initially more expensive than VCRs but saves money in the long run."

"Things have come a long way since people negotiated catwalks with binoculars," said Rudd, who authored the textbook *Introductions to Casino and Gaming Operations*.

### PLAYING ONLINE

Rio plans to stay on the leading edge by building a Web site that could eventually be used for online gaming, which Ferry said the Nevada Gambling Commission is considering. "We have to be ready for the future," Ferry said.

"Casinos see it coming and realize they must embrace it to compete," Rudd said. "But it's not growing as fast as some thought it would. The basic issue is it has to be made legal first, then secure."

The Rio network includes IBM AS/400 minicomputers that handle room reservation applications. It also includes servers that track slot machine use, record sales from advanced retail POS systems and distribute video.

PCs with business applications in guest rooms can access the Internet via a stand-alone firewall.

## Year 2000 retrofitting

CONTINUED FROM PAGE 48

beginning next year. That's fully two years before the deadline for retrofitting programs with two-digit date fields to handle 1999 flipping forward to 2000.

In addition, the analysis and coding was completed by a full-time team of only six people, each of whom was hand-picked for the project.

### BRIEFLY MANAGEMENT

then given the flexibility and financial incentives to bring it in on schedule.

"First, we structured the project so that people could work out of the Alhambra office or at home on notebook computers," which was a significant change for Delta, project manager Jim Wagner said. Last week, Wagner won a project leadership award for Delta's year 2000 program from Applied Business Technology Corp. in New York.

### CASH HELPS

Additionally, Delta offered team members a bonus of 10% of their salary for completing the coding work on time.

All team members were people who had helped develop the original program.

Ongoing executive support — often generated by Wagner himself — has been another key factor to the project's success so far.

"When we first got started, I'd clip articles and make presentations to the executive team up to the issue," Wagner said.

One of his tactics was to issue pop quizzes to executives whose correct answers would win them

a free lunch with an information systems staffer of their choice.

"I was trying to make them aware of the importance of this project," Wagner said.

Now, with its own century date coding completed, Delta has entered phase two of its project. That is helping its non-

computer-aware customer base of 450 home health care agencies prepare to implement Delta's new software.

"Home health care agencies' tend not to be very sophisticated computer users," said Keith Crowmover, Delta's vice president of sales and marketing.

### OUTSIDE DEPENDENCE

As such, many are unaware that they need to make hardware and software upgrades to run Delta's year 2000-compliant software, Crowmover said. Others may be unaware of the critical shortage of skilled IT professionals to complete such work.

"And if our customers aren't prepared, they're going to pass that dependence on to us," Crowmover said.

So Delta is shifting its year 2000 focus to educating its customers about the century date change problem and the importance of starting to work on it immediately.

"We're starting by sending out a letter with a message that says if you haven't started your year 2000 initiative, you're already behind," Crowmover said. □

## SHORTS

### Insurers slowly go online

Fewer than 3% of insurance companies use the Internet or commercial online services to let their policyholders view, query and update policy information, according to "Global Insurance in the 21st Century," a recent study from The Economist Intelligence Unit, a member of The Economist Group in London. But that figure is expected to rise to 45% in the next five years, according to the 160 insurance executives interviewed for the study, conducted in cooperation with IBM's Global Insurance Industry practice.

### Bakery picks Unicenter

Mrs. Bain's Bakesies, Inc. has adopted the Unicenter TNG sales from Computer Associates International, Inc. in Ithaca, N.Y., to centrally manage its systems and network. The regional

bakery in Fort Worth, Texas, said it wants the integrated tools for globally managing software distribution to diverse clients and servers for SAP R/3 applications.

### Report: Smart cards on rise

The worldwide use of smart cards will grow from last year's 20 million transactions to 25 billion in 2005, according to a new study from Kilian & Associates, Inc. The Palo Alto, Calif.-based research firm's report, "Non-Bank Smart Card Strategies," said telephone companies are positioned to use smart cards to capture a large share of the market for electronic cash and internet payments.

Payment services based on smart cards will let phone companies grab a large share of the cash replacement market, including internet payments.

## Warehouses, the sequel

CONTINUED FROM PAGE 48

other departments was the 20-fold increase in new data from other departments that would have to be reconciled, Leary said.

That's not uncommon — 70% of the labor that goes into maintaining data repositories is spent reconciling and cleaning up data, said Alan Paller, director of education and research at The Data Warehousing Institute in Bethesda, Md. Sears expects to bypass the reconciliation traffic jam by using automated reconciliation tools.

Observers said another emerging trend in data warehousing is World Wide Web access for external customers.

Customers of systems integrator CompuCom Systems, Inc. in Dallas are able to access its Oracle Corp.-based Web catalog for hardware and software inventory and order tracking information using Web browsers.

The success of the Web catalog has led CompuCom President Edward Anderson to tell Wall Street analysts that the system has helped the company win \$500 million in new business over the past two years, according to Jack Dowling, vice president and chief information officer at CompuCom.

"That's a good thing [for information systems] to be a part of," Dowling said. □

## Managing

**Dear ex-bean: Part II**  
More readers vent their frustrations with their former supervisors. Page 77

# Sharing the Wisdom

**IS departments have developed knowledge management applications for users; now they're helping themselves**

BY ALICE LAPLANTE

**J**ames Klinck is on a search for knowledge.

As vice president of application development at Metropolitan Life Insurance Co. in New York, Klinck says he wants his worldwide staff of programmers and analysts to share their knowledge and expertise. So he's excited by the possibilities of knowledge management — the practice of capturing a company's collective experience, know-how and wisdom, and making it available to anyone who needs it.

To that end, Klinck established a Notes discussion group to promote worldwide grassroots brainstorming on the best ways to benchmark and cost-justify information technology processes. "We're changing our mind-set within IT," he says. "We don't want to be perceived as a staff organization, but as one that thinks and manages itself like a business. And we think [knowledge management] can help us achieve this."

Klinck isn't alone in believing that knowledge management promises to significantly boost em-



ployee productivity and creativity. But he's ahead of the curve in applying these notions within IT, analysts and knowledge management gurus say.

"Everyone agrees that IT is a critical part of capturing and transferring organizational knowledge," says Carla O'Dell, president of the American Productivity and Quality Center (APQC) in Houston, a business research organization sponsored by more than 100 major U.S. corporations.

But, O'Dell says, the vast majority of APQC members working on knowledge management systems are focusing on non-IT functions, specifically those areas where immediate revenue-generating opportunities exist or where immediate process problems hurt profitability.

Take Monsanto Corp. O'Dell regards the St. Louis-based manufacturer as a worldwide leader in

Sharing the wisdom, page 74

# Sharing the Wisdom

CONTINUED FROM PAGE 7A

knowledge management practices. According to Bipin Jumarikat, Monsanto's director of knowledge management, only recently has there been talk about doing knowledge management for IT itself.

"It has to do with the corporation's perception of where you get the most value," Jumarikat says. "In the past, we've had to be constantly thinking: How can we most dramatically impact Monsanto's income, sell more Monsanto products, bring in real money?"

For knowledge management to be successful, "data has to become information, and information has to become wisdom," says Jim Bait, research director at Gartner Group, Inc. in Stamford, Conn. "But just trying a budget for wisdom, especially for a department that doesn't directly generate sales."

So it isn't surprising that the most advanced knowledge management efforts are found at companies where leveraging IT know-how directly impacts the bottom line. One example is technology consultancies, where far-flung employees working on projects at different client sites can rarely compare notes in person.

At consultancy Price Waterhouse, efforts are found at companies where leveraging IT know-how directly impacts the bottom line. One example is technology consultancies, where far-flung employees working on projects at different client sites can rarely compare notes in person.

At consultancy Price Waterhouse, efforts are found at companies where leveraging IT know-how directly impacts the bottom line. One example is technology consultancies, where far-flung employees working on projects at different client sites can rarely compare notes in person.

Knowledge management applications for IT tend to fall within four categories:

- Sharing best practices and access to knowledge bases that cover "standard" IT support functions such as installing hardware and software.
- Supporting telephone-based help-desk support of end users.

- Bringing together geographically dispersed employees to collaborate on team projects.
- Learning from and reusing knowledge accumulated during past IT efforts.

Klinck says he hopes to achieve significant productivity gains by focusing on the last category. Six months ago, he established a special "reuse" group within MetLife's application development group. Working with ongoing software development teams to ensure their work will be "reusable" by other IT initiatives.

At Deloitte & Touche, a Notes-based "pointer" database encourages collaboration between workgroups by keeping an up-to-date list of IT workers worldwide and their areas of technical expertise. Thus, if you need to know more about Windows NT, "you'll immediately know who to contact," says Larry Quinlan, director of practice support at Deloitte & Touche in Atlanta.

At Texas Instruments, Inc. in Dallas, where a corporate office of best practices was established in 1994, a knowledge management initiative in IT uses Notes to build "project notebooks" for each development project. The notebooks are used as a way to leverage everything learned within the life cycle of a particular undertaking. "If you successfully capture everything that goes on, you have an immensely valuable 'lessons-learned' notebook that includes all schedules, technical notes and interactions between team members," says Cindy Johnson, director of knowledge management and head of the Office of Best Practices at TI.

An example of how knowledge management can improve help-desk operations was created by Derrick LaRiviere, product manager for enterprise help-desk services at MCI SystemHouse in Calgary, Alberta. He manages seven call

centers in North America, serving corporate customers that want to outsource internal IT support. His staff takes calls from end users who face difficult hardware, software or networking problems.

That means individual help-desk employees must be well-informed on an impossibly broad — and ever-changing — array of technologies.

LaRiviere created a system that leverages the collective wisdom of its tech-

**JAMES KLINCK** has established a special "reuse" group within the application development group at Metropolitan Life Insurance. Its mission: Work with ongoing software development teams to ensure their work will be "reusable" by other IT initiatives.

nical support representatives. When a call comes in, employees are prompted to lead the user through a series of questions about his specific configuration and "symptoms." At any time, employees can instruct the system to come up with possible diagnoses and solutions. Whenever a problem and associated solution is identified, they're stored in the database. "We've achieved two important goals," LaRiviere says. "Our users get their problems resolved more quickly. And because we're able to reuse solutions, our operating costs are down."

## CULTURE COUNTS, TOO

Engstrom and others stress that putting the right technology into place won't necessarily do the trick — not by itself. There's a cultural aspect to getting IT workers to share their knowledge and experience. Often it's a question of time.

At TI, where a recent IT re-engineering initiative dictates that "we reuse before we buy, and we buy before we build,"

Johnson knows it's not enough merely to have team members take electronic notes on what they're doing and hope other employees pay attention.

So Johnson established a new category of IT workers specifically charged with making sure that knowledge management systems are used. They're full-time employees who monitor ongoing development efforts — both internal and external to IT — for specific business groups. They apply experience and knowledge where it's needed most.

"We realized we needed to dedicate workers to the task of understanding the specific needs of each business — and to be constantly on the lookout for those technology solutions that could be easily assembled from what already existed," Johnson says. "We realized this wasn't going to happen by itself."

"You've got to do a lot more than simply create a database and say it's out there," Klinck says. "If your employees are facing a project deadline, they'll be focused on that, not on documenting their efforts for others." That's why Klinck created the "reuse" group and why he assigns "reuse" specialists to individual IT development projects to keep everyone's attention on the long-term goals of knowledge sharing.

But above all, IT managers must be conscious that they're fighting an ingrained perception: the notion that IT is "special" and needs to be protected.

"There's a sense that what we do within IT is artistic and immeasurable and nonreproducible," Klinck says. "It's this perception that is most probably stalling faster adoption of knowledge management techniques."

"Getting your IT people to think in terms of collaborating — especially outside their normal turf — can be a challenge," Quinlan says. "But once you convince them to do it, then putting the right technical infrastructure in place is enormously useful." □

*LaForte is a freelance writer in Woodside, Calif.*

## Top firms spend more on IT

Information technology spending is bigger than you think, especially among top-performing companies.

Howard Rubin, one of the IT world's most dogged statistics catchers, recently finished his 1995-96 Worldwide Benchmark project on IT spending, practices

and performance. He fished for data from 870 companies, and the numbers he caught are big.

The top 500 U.S. companies by revenue spend \$100 billion within their information systems organizations, employ more than 300,000 U.S. professionals and spend more than \$4,000 per employee on average on IT per year. Rubin, who is chairman of the computer science department at Hunter College in New York and is a research fellow at Intel Group, Inc. in

Stamford, Conn., doesn't have comparable numbers for 1994-95.

Industry leaders — the

companies in the top 10% or 25% in their segments by growth in revenue and pretax profits — are increasing IT spending as much as 72% (health care industry). Even leaders in the lagged areas (utility/energy) are increasing IT spending 71%.

According to Rubin, the companies that are increasing their investments hope to make them pay off. "Companies ramping up their investment in IT tend to focus more on strategic projects that advance the business, both in short and long term," he says. But is all this money well-spent?

Not at all. Rubin says 30 cents on every IT dollar is wasted on

nonvalue-added work, just fixing software defects takes up 22 cents. That money could be spent on value-adding activities such as new development. He says he expects year 2000 firms to cut an additional 35 cents per dollar this year.

Rubin says there's also a huge discrepancy in how effectively companies spend IT money. Some appear to be getting far more bang for their buck. Take a firm's annual income per employee, divide it by the money spent on IT, and you come up with \$1.15 in income per employee for each IT dollar. But some companies earn a much higher yield: \$47. — Alan E. Alter

## SHOWING THE MONEY

Between 1995 and 1996, the top companies in their industries, judged by growth in revenue and pretax profits, dramatically increased their IT spending, according to the Rubin survey.

Aerospace	18%
Computer	29.8%
Consulting	30.3%
Distribution	28%
Finance	16%
Health care	72.4%
Insurance	50%
Manufacturing	40.6%
Hotel/Restaurant	37.5%
Telecommunications	9.7%
Transportation	24.7%
Utility/Energy	7.5%
Overall	36.8%

f.y.i.



AND TO GET MORE WORK  
OUT OF YOUR WORKSTATION

It's two in the morning, you're on your third espresso shot, and suddenly that big idea dawns on you. Question is, can your UNIX® workstation bring it to life?

With enough memory it can. Fortunately, there's never been a better time to fuel up. That's because Kingston® Technology, the world's leading memory company, has dramatically reduced their prices. Kingston UNIX workstation memory costs nearly half as much as the leading system manufacturer's and our memory is customized to the requirements of the

system or class of systems in which it will be used. So you will always get the right memory (guaranteed 100% compatible) the first time

around. We even have licensing agreements with Sun Microsystems® and Silicon Graphics®, plus service agreements with Digital® and IBM®.\* To get the memory that's just right for your UNIX workstation,

call (800) 435-0669, or look for us on the Web. After all, isn't it time your workstation lived up to its name?

**Kingston**  
TECHNOLOGY

For more information call us at (800) 435-0669



Visit our Web site: <http://www.kingston.com/cw.htm>

\*IBM will no longer provide maintenance service during the warranty period on the RISC 6000 family of products. IBM will, however, continue to provide maintenance service on these products during the post warranty period (after the initial one-year on-site warranty). Kingston Technology Company, 17600 Newhope Street, Fountain Valley, CA 92708 USA, (714) 435-2600, Fax (714) 435-2699. © 1997 Kingston Technology Company. All rights reserved. Kingston is a registered trademark and Computing Without Limits is a trademark of Kingston Technology Company. All other trademarks and registered trademarks are the property of their respective owners.



# World



# New York City

# PC Expo



June 17-19, 1997

at the Javits Center

PC Expo New York is produced by  
PC Expo "ShowNet" and is  
Miller Inc. in New York, NY  
One Park Plaza • New York, NY 101  
800-829-3976 • 212-700-1100 • Fax 212-

Miller Group USA, Inc.

What if it helps your business grow, like help it. Desktops, Notebooks, Workstations, Communications, Apps, System software, Peripherals, Mass storage. Just name it.

Office equipment? Got it. Mobile and Wireless. Computer telephony? That, too.

Internet stuff? We'll bring you WEB X, the East Coast's #1 Internet business event. Networking? In '97, we'll premiere the most important networking event ever to hit the Big Apple: Networks Expo New York. MAC OS? For the first time anywhere, MAC OS EXPO.

The most solutions. The right solutions. That's PC EXPO in New York. The world's one must-attend technology event. Says who? Only 142,323 of the world's most important IT customers, and over 800 of the world's leading exhibitors, that's who.

All the IT you need to see. For one admission. At one time. In one place. PC EXPO in New York. The one and only.

To attend, call 800-829-3976 ext. 2980 or register online at <http://www.pcxpo.com>

Exhibitors? Reach more than 140,000 top IT buyers. Call 800-829-3976 ext. 2930 and ask for Geoff Poli.

# SOLID REPORTING

☐ Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95\* per year - a savings of over 73% off the single copy price.

First Name \_\_\_\_\_ H \_\_\_\_\_ Last Name \_\_\_\_\_  
 Title \_\_\_\_\_ Company \_\_\_\_\_ E-mail address \_\_\_\_\_  
 Address \_\_\_\_\_  
 Address Street: ☐ Home ☐ Business ☐ Mail ☐ Rental Single copy price \$3.95/issue City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 \*U.S. Only. Canada \$55. Mexico, Central/South America \$150. Europe \$200, all other countries \$250.

## Please complete the questions below.

1. **BUSINESS/INDUSTRY** (Circle one)  
 15. Manufacturer (other than computer)  
 25. Financial/Insurance/Bank Sector  
 35. Health/Life/Education  
 45. Wholesale/Retail Trade  
 55. Business Service (except DP)  
 65. Government - State/Federal/Local  
 75. Communications Systems/Public Utilities/Transportation  
 85. Mining/Construction/Manufacturing/Rubber/Agriculture  
 95. Manufacturer of Computers, Computer-Related Systems or Peripherals  
 05. Systems Integrators/Vendors, Computer Service Bureaus, Software Planning & Consulting Service

10. Computer/Peripheral Dealer/Dist./Reseller  
 15. Other \_\_\_\_\_ (Please Specify)  
 2. **TITLE/FUNCTION** (Circle one)  
 3. **MANAGER/ADMINISTRATOR**  
 11. Chief Information Officer/Vice President/Asst. VP  
 21. Director  
 31. Manager  
 41. Supervisor  
 51. Analyst  
 61. Programmer  
 71. Systems Administrator  
 81. Consultant  
 91. Other

41. Engineering, Scientific, R&D, Tech. Management  
 51. Systems Integrator/Vendor/Consulting Management  
 61. President, Owner/Partner, General Mgr.  
 71. Vice President/Asst. Vice President  
 81. Treasurer, Controller, Financial Officer  
 91. Other  
 1. **COMPANY TYPE** (Circle one)  
 11. Private  
 21. Public  
 31. Non-Profit  
 41. Other

3. Do you use, include, specify, recommend, purchase (Check all that apply)  
 Operating Systems  
 (a) Software (b) OS  
 (c) Hardware (d) Windows NT  
 (e) UNIX (f) Macintosh  
 (g) Other  
 4. Which of the following products do you use, specify, recommend or approve the purchase of (Check all that apply)  
 (a) Internal software  
 (b) External software  
 (c) Other

# COMPUTERWORLD

6477 X

# CANDID VIEWS

☐ Yes, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of \$39.95\* per year - a savings of over 73% off the single copy price.

First Name \_\_\_\_\_ H \_\_\_\_\_ Last Name \_\_\_\_\_  
 Title \_\_\_\_\_ Company \_\_\_\_\_ E-mail address \_\_\_\_\_  
 Address \_\_\_\_\_  
 Address Street: ☐ Home ☐ Business ☐ Mail ☐ Rental Single copy price \$3.95/issue City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 \*U.S. Only. Canada \$55. Mexico, Central/South America \$150. Europe \$200, all other countries \$250.

## Please complete the questions below.

1. **BUSINESS/INDUSTRY** (Circle one)  
 15. Manufacturer (other than computer)  
 25. Financial/Insurance/Bank Sector  
 35. Health/Life/Education  
 45. Wholesale/Retail Trade  
 55. Business Service (except DP)  
 65. Government - State/Federal/Local  
 75. Communications Systems/Public Utilities/Transportation  
 85. Mining/Construction/Manufacturing/Rubber/Agriculture  
 95. Manufacturer of Computers, Computer-Related Systems or Peripherals  
 05. Systems Integrators/Vendors, Computer Service Bureaus, Software Planning & Consulting Service

10. Computer/Peripheral Dealer/Dist./Reseller  
 15. Other \_\_\_\_\_ (Please Specify)  
 2. **TITLE/FUNCTION** (Circle one)  
 3. **MANAGER/ADMINISTRATOR**  
 11. Chief Information Officer/Vice President/Asst. VP  
 21. Director  
 31. Manager  
 41. Supervisor  
 51. Analyst  
 61. Programmer  
 71. Systems Administrator  
 81. Consultant  
 91. Other

41. Engineering, Scientific, R&D, Tech. Management  
 51. Systems Integrator/Vendor/Consulting Management  
 61. President, Owner/Partner, General Mgr.  
 71. Vice President/Asst. Vice President  
 81. Treasurer, Controller, Financial Officer  
 91. Other  
 1. **COMPANY TYPE** (Circle one)  
 11. Private  
 21. Public  
 31. Non-Profit  
 41. Other

3. Do you use, include, specify, recommend, purchase (Check all that apply)  
 Operating Systems  
 (a) Software (b) OS  
 (c) Hardware (d) Windows NT  
 (e) UNIX (f) Macintosh  
 (g) Other  
 4. Which of the following products do you use, specify, recommend or approve the purchase of (Check all that apply)  
 (a) Internal software  
 (b) External software  
 (c) Other

# COMPUTERWORLD

6477 X



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES



**BUSINESS REPLY MAIL**

FIRST-CLASS MAIL PERMIT NO. 558 MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

**COMPUTERWORLD**

P O BOX 2044  
MARION OHIO 43306-4144



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES



**BUSINESS REPLY MAIL**

FIRST-CLASS MAIL PERMIT NO. 558 MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

**COMPUTERWORLD**

P O BOX 2044  
MARION OHIO 43306-4144



► Readers share four major sins of their former supervisors

# Dear ex-boss:

**Chapter II** Hey! Isn't anybody happy out there? Our second request for "letters to your ex-boss" generated more than 20 E-mails, including one from Russia and several that weren't even from information systems professionals. The biggest complaints fall into four areas, which we present below. Read and learn.

Still, we've got to wonder, with all the lousy bosses out there, there must be some lousy IS staffers who more than deserve the ax. In the interest of fair play, we're inviting ex-bosses to give us their side of the story. Are IS managers the only ones who can't communicate, don't understand technology, are underpaid and overworked? What would you, as an IS manager, tell your ex-employees?

Of course, we still want to hear from the tired, the poor and other huddled IS masses happy to (at last) be breathing freely.

Send private E-mail to [robert\\_scheier@cw.com](mailto:robert_scheier@cw.com). We'll post the best letters online this week on our World Wide Web site, [www.computerworld.com](http://www.computerworld.com). And we'll publish some of the responses within two months.



## Control freaks

■ "When I first interviewed here, you promised autonomy to me and my department... After... six months of your constant micromanaging, I have decided to quit. I don't appreciate having to get your approval on each and every new computer, piece of software or equipment I buy."

■ "Everyone reaches a point in their career when they outgrow their boss." The manager should "either promote the individual or move them into a lateral position... with the challenge the individual craves." Instead, you "require them to have you sign off on everything, no matter how small the expenditure."

■ "If you don't trust your people to

do their jobs, don't hire anyone, and do the job yourself."

## Scrooges

■ "Salaried employee" does not mean unlimited free overtime... It is demoralizing to work with consultants who get paid more than you, never work overtime... and do not share the on-call duties. When vacancies go unfilled, "that tells me the company is not paying enough for the expertise, which means I am underpaid. So why am I staying here and working to death?"

■ "The staff of IT has been reduced by more than half, yet [our] projects... have grown in number and complexity. The company spent \$1 million over five years" on advanced systems for its field offices. "But if the current... casus from IT continues, no one will remain [who] fully understands the system."

■ "I have worked my way through the messenger department, to the data processing department, to my current position, which roughly translates to... anything computer-related for the entire accounting department. The [IS] projects stacking my desk outnumber my regular daily duties... [but] I'm still considered an employee of the accounting department, and I'm still on that [lower] pay scale."

## Shufflers and numbers

■ "In my two-and-a-half years with the company, I've reported to six different

bosses, had 15 subordinates [and] then none, had "responsibility" for scores of different clients and been part of three "trading areas" with different geographical boundaries. In the four months I've reported to you, we've spoken face-to-face one time — and that wasn't even a private conversation."

■ "Give me a yes/no answer, not a one-and-a-half-hour lecture... Speak in plain English, not [like] a dictionary. Be honest with your people — in a review, you BS for two hours, and your employees are so dazed, they don't know where they stand."

■ "In the last 18 months, four of five managers in the MIS area have left the company, and the fifth is now in another area. It has been made company policy that eventually all functions, excluding manufacturing, will be relocated... I have concerns about what my place might be, if any, in this new structure."

## Clowns and soundbites

■ "Dishonesty is something I will not tolerate. When I saw you direct the proliferation of one copy of PC software to over 100 machines, I asked you about the potential licensing impact. Your reply was, 'If they ask, we'll pay them.' By the way, I was the one who called the SPA [Software Publishers Association].

■ "I... did not appreciate the pressure placed on me to, shall we say, copy software from one PC to many. When I finally refused to carry out this activity, thus causing the company to purchase multiple copies/licenses, I was made to feel that I had done the company a great financial injustice... I may have saved you a visit from the SPA."

■ "Promising your [employees] things and then not delivering simply because there was a legal loophole in the contract... is a sure-fire way to increase your staff turnover."

■ "I don't fault you for not knowing how to print to the network printer... I don't fault you for not keeping up with trends in technology... I don't even fault you when you can't remember your password... I do, however, hold you responsible for not knowing how to manage staff and resources. You're the manager, remember? Maybe you should spend time with your staff instead of your peers in management retreats and get to know reality."



LEILANI ALLEN

## WHEN 'WIN-WIN' OPTION BECOMES A LOSER



**T**alent demands top wages. But salary isn't everything, and creative IS managers are turning to alternative reward systems, including telecommuting, to help in their recruitment efforts.

With telecommuting — whereby a staff member works at home some or all of the time — an employee enjoys flexibility, and the manager usually sees an increase in productivity. Sounds like a win-win situation. Is it?

Sally decided to offer telecommuting as an option to her 100-person IS staff. The department had three functional groups: development, operations and engineering (composed of senior staff members who performed mostly research functions).

Sally convened a group of three managers — Harriet from development, Leo from operations and Gene from engineering. She provided them with the following guidelines:

- Provide for occasional telecommuting, at least at the beginning.
- Ensure that the participant and his manager are held accountable for results.
- Document the participant's accomplishments.

Sally and the three managers discussed some of the problems of telecommuting programs, such as managers' fear of loss of control, the possibility that last-minute home emergencies would trigger "telecommuting" days and the fact that not all employees had a home situation or the discipline to let them work in an isolated fashion.

The managers were nonetheless excited by the proposal and agreed to devise a three-month pilot program. After several meetings, they settled on a contractual mecha-

nism. Anyone who wanted to telecommute had to commit to perform work roughly equivalent to an eight-hour day. Managers would review pledges in advance and check work after the fact. That way, both parties were engaged in the commitment, and communication was ensured. The program was announced to the staff, and managers were instructed to encourage participation whenever feasible and to take advantage of the program themselves.

### GOOD FOR SOME

The pilot program's results varied by department. Half the development staff took at least one telecommuting day, and far more analysts than programmers telecommuted. Only a handful of people in the other two groups participated.

The developers were highly supportive of the program and said they were very productive at home. But managers were unable to free up their schedules to take advantage of the option. The operations staff, tied more to the hardware and the production environment, couldn't justifiably be away from the office. If they did telecommute, they were far more likely to be interrupted by telephone calls.

As it turned out, the operations staff had a long-standing gripe against the development group. Operations staffers felt they were always left to cover for mistakes developers made. They saw the telecommuting program as an example of special privileges developers received. Leo, the operations

chief, received the brunt of the complaints.

Harriet, the development manager, got some negative feedback as well, especially from programmers and users who were used to dropping by the analysts' cubicles with questions. Wasn't that the kind of collaboration the company was trying to encourage? And what about trying to schedule meetings when someone was unavailable?

**JUDGMENT CALL:** Sally concluded that the experiment was a mixed success and decided to repeat it. She was disappointed that the program made operations staffers feel slighted and that it exacerbated an ongoing problem. She also thought the program in some ways sent the wrong message to staff: that the only way to really be productive was to stay out of the office.

How might some of the negatives have been avoided? The program was set up to be essentially a contract between the individual and his manager. It might have been better to have each of the project teams, including the users, meet and discuss how they would make use of the opportunity as a team. If human resources had been enlisted, it might have made suggestions to stave off negative reactions.

Also, if operations and engineering had been foreseen as unlikely participants, members of those groups could have been offered an alternative. Possibilities include four-day workweeks or additional training, held outside to ensure availability during an emergency.

Nonetheless, Sally did the right thing in seeking to enhance her employees' work environment. In today's difficult struggle between work and home, telecommuting is an option to consider. But it causes us to re-examine some of our fundamental notions of work, and that can be a surprisingly painful exercise. □

*Allen's column deals with the kinds of people issues that managers face every day but are reluctant to discuss openly. Each column is based on a real-life situation. The names and certain circumstances are changed to protect confidentiality. Allen is a director at Tines, a management consulting firm in Burlington, Mass.*

## CEOs among top Web snoops

Who in your company is most likely to use the Internet for gathering marketing and com-

### petitive intelligence?

Would you believe it's the folks in the corner office?

That's the result of a survey by Fuld & Co. in Cambridge, Mass. Eighteen percent of respondents to a questionnaire on Fuld's World Wide Web site ([www.fuld.com](http://www.fuld.com)) named "senior management" (including presidents, CEOs and senior vice presidents) the top group that uses the

Internet for competitive gathering. Respondents came from 150 Fortune 1,000 companies, firm President Leonard Fuld says. They were mostly in marketing or strategic planning positions.

The most useful intelligence resource areas on the Internet are indexes, such as Yahoo, and corporate home pages, respondents say. Usenet groups were considered the least useful.

— Allan E. Alter

### SNOOPY SENIOR EXECUTIVES

Which function in your organization do you think most uses the Internet for market or competitive intelligence?



Source: Fuld & Co., Cambridge, Mass.

fyi.



**LEONARD ALLEN**

## WHEN 'WIN-WIN' OPTION BECOMES A LOSER



Talent demands top wages. But salary isn't everything, and creative IS managers are turning to alternative reward systems, including telecommuting, to help in their recruitment efforts.

With telecommuting — whereby a staff member works at home some or all of the time — an employee enjoys flexibility, and the manager usually sees an increase in productivity. Sounds like a win-win situation, is it?

Sally decided to offer telecommuting as an option to her 100-person IS staff. The department had three functional groups: development, operations and engineering (composed of senior staff members who performed mostly research functions).

Sally covered a group of three managers — Harriet from development, Leo from operations and Gene from engineering. She provided them with the following guidelines:

- Provide for occasional telecommuting, at least at the beginning.
- Ensure that the participant and his manager are held accountable for results.
- Document the participant's accomplishments.

Sally and the three managers discussed some of the problems of telecommuting programs, such as managers' fear of loss of control, the possibility that last-minute home emergencies would trigger "telecommuting" days and the fact that not all employees had a home situation or the discipline to let them work in an isolated fashion.

The managers were nonetheless excited by the proposal and agreed to devise a three-month pilot program. After several meetings, they settled on a contractual mechan-

ism: Anyone who wanted to telecommute had to commit to perform work roughly equivalent to an eight-hour day. Managers would review pledges in advance and check work after the fact. That way, both parties were engaged in the commitment, and communication was ensured. The program was announced to the staff, and managers were instructed to encourage participation whenever feasible and to take advantage of the program themselves.

### GOOD FOR SOME

The pilot program's results varied by department. Half the development staff took at least one telecommuting day, and far more analysts than programmers telecommuted. Only a handful of people in the other two groups participated.

The developers were highly supportive of the program and said they were very productive at home. But managers were unable to free up their schedules to take advantage of the option. The operations staff, tied more to the hardware and the production environment, couldn't justify being away from the office. If they did telecommute, they were far more likely to be interrupted by telephone calls.

As it turned out, the operations staff had a long-standing gripe against the development group. Operations staffers felt they were always left to cover for mistakes developers made. They saw the telecommuting program as a display of special privileges developers received. Leo, the operations

chief, received the brunt of the complaints.

Harriet, the development manager, got some negative feedback as well, especially from programmers and users who were used to dropping by the analysts' cubicles with questions. Wasn't that the kind of collaboration the company was trying to encourage? And what about trying to schedule meetings when someone was unavailable?

### JUDGMENT CALL: Sally concluded

that the experiment was a mixed success and decided not to repeat it. She was disappointed that the program made operations staffers feel slighted and that it exacerbated an ongoing problem. She also thought the program in some ways reit the wrong message to staff: that the only way to really be productive was to stay out of the office.

How might some of the negatives have been avoided? The program was set up to be essentially a contract between the individual and his manager. It might have been better to have each of the project teams, including the users, meet and discuss how they would make use of the opportunity as a team. If human resources had been enlisted, it might have made suggestions to stave off negative reactions.

Also, if operations and engineering had been foreseen as unlikely participants, members of those groups could have been offered an alternative. Possibilities include four-day workweeks or additional training, held on-site to ensure availability during an emergency.

Nonetheless, Sally did the right thing in seeking to enhance her employees' work environment. In today's difficult struggle between work and home, telecommuting is an option to consider. But it causes us to re-examine some of our fundamental notions of work, and that can be a surprisingly painful exercise. □

*Allen's column deals with the kinds of people issues that managers face every day and are reluctant to discuss openly. Each column is based on a real-life situation. The names and certain circumstances are changed to protect confidentiality. Allen is a director at Times, a management consulting firm in Burlington, Mass.*

## CEOs among top Web snoops

Who in your company is most likely to use the Internet for gathering marketing and com-

### petitive intelligence?

Would you believe it's the folks in the corner office?

That's the result of a survey by Fuld & Co. in Cambridge, Mass. Eighteen percent of respondents in a questionnaire on Fuld's World Wide Web site ([www.fuld.com](http://www.fuld.com)) named "senior management" (including presidents, CEOs and senior vice presidents) the top group that uses the

Internet for intelligence gathering. Respondents came from 150 Fortune 1,000 companies, firm President Leonard Fuld says. They were mostly in marketing or strategic planning positions.

The most useful intelligence resource areas on the Internet are indexes, such as Yahoo, and corporate home pages, respondents say. Usenet groups were considered the least useful.

— Allen E. Alter

### SNOOPY SENIOR EXECUTIVES

Which function in your organization do you think most uses the Internet for market or competitive intelligence?

Senior management \_\_\_\_\_

Sales \_\_\_\_\_

Research & development \_\_\_\_\_

Library \_\_\_\_\_

Other \_\_\_\_\_



SOURCE: FULD & CO., CAMBRIDGE, MASS.

fyi.

## Buyer's Guide

BY HOWARD MILLMAN

# www.toolboxes

**C**ONTRARY TO POPULAR opinion, the perfect corporate money-making machines aren't the new high-resolution color copiers; they're World Wide Web sites. They chug away in the background taking orders, enhancing brand recognition, dispensing information and reducing the number of customer service representatives. That's the theory, at least. But before any of those benefits will come to pass, you need the tools to build and manage your site.

I analyzed five packages to evaluate their suitability for building and managing enterprise-class Web sites. Because the sophistication of a corporation's Web site doesn't always directly relate to the corporation's size—as do its internal databases, for example—I analyzed a range of products.

Skilled developers who demand exacting control of a site's appearance will find it in NetObjects, Inc.'s Fusion and SoftQuad International, Inc.'s HotMetal Pro. Microsoft Corp.'s FrontPage takes first place for overall ease of use and its optional team development features. Corel Corp.'s WebMaster Suite's encyclopedic array of images, video, audio and multimedia objects will satisfy the artists in any shop. Finally, users who look primarily for ease of use will find it in Claris Corp.'s HomePage.

The Web is an exceptionally graphical place, so I evaluated how much control these packages bestow over color, object placement and appearance of images and text, including animation. Corel's WebMaster is the clear leader in this category. While page appearance may not rate as high for intranets, where the audience is



# www.toolboxes

CONTINUED FROM PAGE 2

essentially captive, it still warrants consideration because it makes for easier reading and greater comprehension.

The Web also is an increasingly sophisticated place, as are its users. They want compelling content, the kind that entices visitors to tarry and return.

For that, you need dynamic content, which comes from Java applets, ActiveX controls and object animation.

## TRANSACTION ORIENTATION

If you intend to offer real-time interaction, you also need a transaction-enabled site, one that empowers users to enter, search or retrieve data from selected back-end databases. FrontPage gets the nod here, closely followed by Fusion.

Fusion's links to C++, Java and Visual Basic

weren't available in time for our tests; NetObjects plans to release the application programming interfaces (API) early this month.

To a degree, all the tested products attempt to automate the initial site development and subsequent maintenance operations by insulating you from the need to write Hypertext Markup Language (HTML) code, CGI (Common Gateway Interface) or Java scripts or agonize over design matters. Most packages also offer timesaving shortcuts or wizards that accelerate various tasks.

Because cardinal rule one of Web site operation decrees that you "keep it fresh," I deemphasized the packages' prices.

The cost of constantly updating your content will easily outstrip a package's initial purchase price.

into HTML for publishing them on the Internet.

You also can mount Office 97 documents on an in-house intranet in their native format, which eases their retrieval and subsequent reuse by co-workers. In either case, you just drag and drop the file onto the appropriate icon, a technique so simple anyone can master it. Other standard features include a variety of timesaving wizards and templates, although the home page templates are rudimentary and lack visual appeal.

FrontPage has two main components: FrontPage Editor, for creating Web pages;

and FrontPage Explorer, for viewing your site's layout and links. Explorer gives you a view of your entire site, including remote servers, which eases site maintenance.

## SITE MANAGEMENT

FrontPage can divide a site's home page (often called the index.html document) into header, footer and body sections, which is potentially confusing. While separating the pages into sections simplifies managing large sites by enabling the same header and footer to appear on each page, the original file will have three

index.html files associated with it. I would like to see the Explorer View clearly indicate the pages and sections to which each HTML file belongs.

FrontPage assumes you will be sharing site maintenance with others and consequently supports a modest array of team-oriented development tools.

For example, each time you create a page, FrontPage creates a "to do" list for the site, which lets multiple users share a task list for the site. It tracks who made changes and what tasks are still waiting for completion.

For true team development efforts, you'll need Microsoft's Visual Source Safe. You'll have to be in a Windows NT environment because it's an NT-based add-on. It supports check-in and check-out, and it makes real-time updates. Prices for the utility start at \$500.

## MANUAL HTML

FrontPage offers an HTML editor for manually tweaking HTML. Although it minimizes the need to tinker with HTML, it doesn't try to totally insulate you, as does NetObjects' Fusion. The editor's color coding accelerates scanning for specific HTML code tags. Other automatic code-generating features include a Script Wizard that generates the necessary Basic scripts to trigger methods. Developers who have an understanding of Visual Basic can construct fully interactive Web pages.

FrontPage's Image Composer automatically converts BMP and PCX files to transparent GIF or JPEG files when you save your pages. One nice touch lets you set up a resolution swap for images. While the lower-resolution image loads, the browser retrieves the high-resolution image in the background.

## WONDERFUL WEBBOTS

FrontPage's WebBot components, pre-designed CGI scripts, let you create and launch interactive elements—including on-screen forms—without resorting to scripting CGI. For example, the Table of Contents WebBot creates an outline of your site with hyperlinks to each page. Other WebBots include search and feedback forms, discussion and registration. The latter lets you set a password for registered users.

FrontPage's WebBot, while useful, won't suffice for complex database handling. For that, you may find that you need to resort to CGI or Java scripting. Development shops that use Microsoft's Windows NT-based Internet Information Server (IIS) or Personal Web Server extensions gain the added benefit of real-time, back-end database access, which enables interactive transactions.

FrontPage includes a written tutorial, but users would be better served if it included an interactive tutorial that explained all of the program's encyclopedic array of features.

www.toolboxes.com J2



## MICROSOFT FRONTPAGE 97

WITH BONUS PACK

MICROSOFT CORP.  
Redmond, Wash.  
(800) 456-9400  
www.microsoft.com

### PLATFORMS

Windows 95, Windows NT,  
Macintosh

### PRICE

\$149

FrontPage 97 gets my vote for the best all-around site development and maintenance system. Although it doesn't offer the simplicity and ease of use of Claris' HomePage or the comprehensive graphic content of Corel's WebDesigner, it does deliver all the requisite features skilled programmers' information technology staff members or site administrators would expect in a firm-rate application.

Its highlights include drag-and-drop editing, a Windows 95-compliant interface that features familiar menus, support for team development and expanded HTML support that lets you add markup text, watermark, background images and sounds to your pages.

You are unlikely to run out of road with FrontPage. As a measure of its scalability, it supports ActiveX controls, JavaScript, Visual Basic scripts, a variety of plug-ins, PowerPoint animations, multimedia, database integration and secure communications.

Tight integration with Office 97 results in fast conversion of Office documents



FrontPage's WebBots, pre-designed CGI scripts, let you create search, feedback and guest-book registration forms without scripting CGI. The Table of Contents WebBot shown above creates a site outline with hyperlinks to each page.



T H E N E W F A M I L Y

# NT CLUSTER~IN~A~BOX

You can configure a lot of these, or you can just plug this.

*Good choice!*

Get the industry's first Microsoft Windows NT clustering solution packaged in a single, rack-mounted system. With Data General's NT Cluster-in-a-Box™ family of products, your company now has an NT clustering solution that will let you run your critical applications 24x7x365, in a system that you simply plug in and turn on. Our NT Cluster-in-a-Box includes:

- Two rackmounted AViiON® servers based on Intel Pentium® Pro processors
- A fault-tolerant CLARiiON® RAID storage system
- NTAlert™ - the industry's only NT-based remote service for early identification of potential problems
- Pre-loaded Windows NT Server and FirstWatch for NT - failover software from Veritas Software
- Upgradable to Microsoft's forthcoming "Wolfpack" clustering technology.

Now, NT Cluster-in-a-Box is available in a family of three rackmount configurations to match your applications processing requirements: the entry-level AV 2100R, mid-range AV 3600R, and enterprise AV 6600R. All of these components, plus service, support, and integration, from one vendor. In one package. The choice is clear. Unless you want to spend a lot of time just plugging away.

 **Data General**

[www.dg.com](http://www.dg.com) 1-800-DATA GEN.

# www.toolboxes

CONTINUED FROM PAGE 88

## NETOBJECTS FUSION 2.0

**NETOBJECTS, INC.**  
Redwood City, Calif.  
(858) 449-6400  
(415) 441-3400  
www.netobjects.com

### PLATFORMS

Windows 95, Windows NT,  
Macintosh

**PRICE**  
\$695

**F**usion 2.0 warrants consideration for webmasters who build large sites ranging from dozens to hundreds of pages. A design- and management-only product, it offers no graphics and few visual elements.

Fusion, a site-oriented Web authoring tool, lets you build large sites quickly and easily. You can drag and drop pages to relocate them on a hierarchical tree and position all page elements with pinpoint accuracy. That skillfully automated and intuitive approach eliminates the need to draw a site map on paper.

The program successfully strives to eliminate coding: as you move pages or elements, or change the properties of either, Fusion automatically generates the required HTML code. On the other hand, if you want to tinker, it provides the requisite access and tools.

Placement of objects is helped by a grid, similar to the pasteboard overlays used in desktop publishing programs, and a tool palette. The tools accelerate placing and manipulating text and pictures, adding Java applets and audio, and building interactive forms. The software also offers a competent set of tools for creating forms.

As we went to press, NetObjects announced the availability of a Component Development Kit (CDK) that provides needed access to databases compliant with Open Database Connectivity (ODBC). Although I couldn't test it,

that powerful, free utility promises to further add to Fusion's suitability for constructing large sites. Using the CDK, advanced developers can wrap Java applets around NetObjects' APIs to enable Dynamic Data Exchange between servers and clients.

Without the CDK, Fusion tops out at just building a static site useful for dispensing only static information.

Fusion clearly excels in its design. Its rapid development environment includes a responsive drag-and-drop mode that seems to anticipate your intentions and encourages experimentation. Anyone who has dabbled in desktop publish-

ing will immediately feel comfortable using that technique. You can move elements anywhere, but they can't overlap, which prevents you from achieving advanced special effects via layering. That's a limitation of HTML, not Fusion.

Likewise, Fusion simplifies inserting Macromedia, Inc.'s Shockwave animation player, ActiveX controls and Java applets — just click to pick, drag and drop in place. NetObjects bundles Acacia Software, Inc.'s Infuse, a Java script editor, to provide interactivity and animation on your site. I initially overlooked the add-in because the only reference to it is an external sticker on the box.

Fusion offers a selection of well-designed, professional-looking templates, but you also can design your own. New objects, the building blocks of a template, materialize with a default property box. Those property boxes provide total access to an object's attributes.

### WEAK CGI SCRIPTING

Unlike applications that provide extensions tailored for use on specific Web servers (such as FrontPage, which provides extensions that link to Microsoft's IIS), Fusion requires you to create CGI scripts that your Internet service provider, or in-house server, can support. Fusion's CGI handler serves as a model for creating a script. Fusion needs more muscle here.



**Fusion excels in site design. By juggling the Properties and Tools palettes, developers can control every characteristic of the site's pages and all its objects down to the DNA level. Its rapid development environment includes a drag-and-drop mode that encourages experimentation.**

Fusion, for all its emphasis on productivity and scalability, suffers from its lack of creative flexibility. For example, it limits you to its supplied backgrounds. You also have to import visual elements from a third-party library or element-creation application. You can't create your own. Because it costs \$695 — which makes it the highest-priced product in the group and perhaps in the entire field — users shouldn't have to buy such add-ons.

Fusion's lack of built-in image editing, graphics editing or animation programs puts it at a disadvantage when compared with some lower-cost competitors.

www.toolboxes, page 84

## 7 RULES OF SITE DESIGN

**1. Choose a project leader to oversee the creation and maintenance of the site. The product you select should conform to the skills set of the designer or design team. Is constructing the site a part-time task for a technically oriented staffer? Do you have a skilled webmaster on staff who is familiar with HTML and CGI code? Consider HomePage for the former, HotMetal Pro, Fusion or WebMaster for the latter. For a team development effort, use FrontPage; it supports check-in and check-out.**

**2. If you're technically oriented, consider using FrontPage or HotMetal Pro. Both offer extensive control over the site's DNA, especially for larger sites that require database access. If your primary interest is in the site's appearance, consider Corel's WebMaster Suite. Its extensive selection of graphics and content elements makes for a visually exciting site. Novice users should consider Claris' HomePage for its short learning curve and ease of use.**

**3. Establish the structure of your site before you load the software. For example, define the links among pages and image maps. Applications such as Microsoft's FrontPage and Corel's WebMaster Suite display a global flowchart of your site. NetObjects' Fusion offers a superb, real-time, site-mapping tool — the best of the group. You may want to first draw the schematic on paper and later transfer it to your application's site-mapping tool.**

**4. Use an HTML editor to build your pages and edit their code. Fusion lets you design your pages without HTML coding.**

**5. You need an image-editing program to edit and convert graphics into .GIF or .JPG, standard formats for Web graphics. The editor also should be able to reduce file size or color depth, which reduces transmission time and helps images load faster. Microsoft's FrontPage, SoftQuad's HotMetal Pro and Corel's WebDesigner all include competent graphic imaging software that reduces the need for third-party imaging programs. Fusion alone requires an external image editor: Web.Move, included in Corel's suite, creates eye-catching animated .GIF files to liven up your pages.**

**6. Use quality content, and "keep it fresh."**

**7. If you plan to collect data with interactive forms, such as a guest book, or provide back-end database access, you will need CGI scripts to process the data. FrontPage excels here. Its WebBot components and wizards — prewritten CGI scripts — interactively help you build forms without having to know CGI. — Howard Milman**

The answer, you might have guessed, is "d." Compaq is

pioneering Fast Ethernet technology and making mass migration from Ethernet to Fast Ethernet simply effortless with a number of industry firsts. With the first dual speed 10/100 hub, you can forget about all those costly trips to the wiring closet. And the first segmentable, stackable 100 Base-T hub nestles comfortably into your current network and delivers drop-in Fast Ethernet access to your server. Now you can overcome cable distance limitations with the only standard-based solution, Smart Uplink. Ultimately, with Compaq Netelligent, you'll benefit from the broadest range of products that are reliable, affordable and offer the greatest price/performance. To learn more, visit us at [www.compaq.com](http://www.compaq.com) or call 1-800-544-5255.



But hurry, because in business these days,

it's survival of the fastest.



*The Compaq Netelligent family of hubs:*

*110B 8-Port 100 Base-T Unmanaged, 3612 12-Port 100 Base-T w/FFX, 2624 100 Base-T Managed*

**COMPAQ**

Has It Changed Your Life Yet?

# www.toolboxes

CONTINUED FROM PAGE 82

## HOTMETAL PRO 3.0

**SOFTWARE**  
INTERNATIONAL, INC.  
Toronto  
(800) 387-2777  
(416) 239-4801  
www.softquad.com

**PLATFORMS**  
Windows 95, Windows NT,  
Windows 3.1, Macintosh, Unix

**PRICE**  
\$139

If you don't mind grope under your fingernails, SoftQuad's robust HTML editor makes HotMetal Pro 3.0 an ideal choice for experienced HTML programmers.

HotMetal Pro soars in some areas and disappoints in others. Its pluses include a smooth-running batch conversion that automatically transforms most popular word processing documents into HTML, a handy keystroke macro recorder, multi-level undo (ideal for experimenting with changes) and a powerful HTML editor that lets you customize a site's pages and gain exacting control over its appearance by adding custom tags.

But its often-confusing array of dialog boxes, palettes and tool bars — plus its page-oriented rather than site-oriented focus — make it best suited for experienced HTML programmers willing to exchange ease of use for exacting control over the content's appearance and the placement of elements. The customizable tool bars let you insert Java or ActiveX applets into HTML code.

The editor works with various releases of HTML, including the current Version 3.2, which is a major benefit. You can circumvent the browser wars by tweaking your page's HTML code to comply with

proprietary tags, which are increasingly found in popular browsers. You need to download a free "rules" file from SoftQuad. You also can quickly tailor your code with the HTML code used on an existing site, thereby simplifying importing, exporting or copying pages. One note of caution: Use the program's multiple browser previews to ensure that your site will appear correctly when viewed in different browsers. Sometimes the test in my test pages inexplicably shifted, and I had to manually relocate it.

Other highlights include a site-management tool, Information Manager, which delivers global graphical views of a Web site. That's a requisite feature for managing large sites. HotMetal Pro's form and Web page templates, unlike those in Microsoft's FrontPage, had a professional look — although not on a par with NetObjects' Fusion.

### FOR HTML EXPERTS

Expertise with HTML is de rigueur, even when working with tables. To return, you get advanced control over placement and appearance. Forms, frames and tables begin life as elements, denoted by an HTML tag. Clicking on an element opens a dialog box that lets you edit its attributes.

Professional touches available in HotMetal Pro's graphics editor, Metalworks, include raised or embossed buttons and banners. It also includes the ability to change file sizes and dimensions, reduce the number of colors (to decrease load times) and create transparent images, which look more natural on a page.

The program comes with 11 sample CGI scripts that can be customized. Compared with FrontPage's Script Wizard, hard-coding a CGI script is uncivilized. Version 4.0 of HotMetal Pro, due in the middle of this month, will have CGI scripting aids and better database access.



HotMetal Pro's array of dialog boxes, palettes and tool bars make it well-suited for experienced HTML programmers willing to exchange ease of use for exacting control over the content's appearance and placement of elements



WebMaster Suite's 8,000-plus images, 200 well-crafted templates and modestly underpowered Web.PhotoPaint image editor let you embed a host of outstanding special effects and eye candy in your pages

## Corel WebMaster Suite

**SOFTWARE**  
COREL CORP.  
Ottawa  
(613) 725-8000  
(800) 773-6735  
www.corel.com

**PLATFORMS**  
Windows 95, Windows NT

**PRICE**  
\$399

The feature-laden WebMaster Suite contains an encyclopedic assortment of graphics and visual elements. Some of the suite's seven modules, such as the site manager and image editor, are outstanding. Others need more work, as does the suite's inconsistent interface.

Corel's suite takes top honors for its comprehensive assortment of graphics, icons and visual elements. WebSite Manager alone is worth the price of the suite. That do-everything module manages local and remote Web sites, monitors multiple Web sites for broken or open links and sounds an alarm when a malfunction occurs.

Corel bundles O'Reilly & Associates, Inc.'s WebSite Pro Web server software to run a site and a SiteBuilder Wizard to help build it. If your site needs transactional capability, Web Data provides the links to back-end ODBC-compliant databases. A wizard painlessly leads you through creating the links.

The package's 8,000-plus images, 200 vibrant templates and Corel's modestly underpowered Web.PhotoPaint image editor let you embed a host of outstanding special effects and eye candy in your pages. The templates are well thought out and generally superior to those in FrontPage.

But Corel needs to improve the speed of its dreadfully sluggish WebDesigner and standardize the interface among all the suite's modules. It appears Corel cob-

bled together some of the suite's modules from past Windows 3.1 products and didn't adequately compensate for the inconsistencies to menus, dialog boxes and keystrokes. The result can be confusing — especially to novices, who are a likely market for the product.

That problem is ironic because WebMaster offers a first-rate, interactive tutorial — the only one in this group. Using the tutorial will give everyone from webmasters to webnewbies essential site design and program-operation insights. The online tutorial does double duty: you can also use it as a quick reference source if you lose your way trekking through the uneven interface.

### NO DRAG-AND-DROP

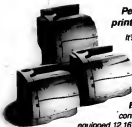
Another shortcoming, unnecessarily complicates file and image handling. Corel plans a fix for the next version. Here and now, the lack of drag-and-drop editing complicated exact placement of page elements. I had to use the space bar, tab or border controls to position image and text elements. I also resorted to direct HTML manipulation of the elements.

Corel's product offers numerous niceties, such as an animated image creation program, Web Move provides 2,100 animated actions and other elements to imbue your pages with "pre-whiz" effects. For the ultimate eye candy, WebWorld, a Virtual Reality Modeling Language player, supports three-dimensional animations. You had better use it on an intranet, where you can control its appetite for bandwidth.

Chief among the suite's other highlights is its capable HTML editor, WebDesigner. Similar to a word processor in form and function, it supports frames, Java applets and automatic image file conversion to GIF or JPG. WebDesigner automatically converts all popular word processing documents into HTML format. Common word processing-like features, such as insert, make it simple to insert elements.

www.toolboxes, page 86

# Recommend the new Lexmark printers over HP? Why should I stick my neck out?



**Performance and value so outstanding, you'll rethink your next printer purchase — introducing the Lexmark Optra S laser printers.**

*It's no secret HP<sup>®</sup> is the customary choice. But for the last six years at Lexmark, we've listened closely to your needs. And created a whole new line of 1200 dpi printers with the quality, reliability and innovations you've been looking for. Introducing the Optra<sup>™</sup> S laser printers.*

**HP compatible.** PCL<sup>®</sup> 6 and PostScript Level 2 emulations are included in every Optra S printer at no extra charge. And, right out of the box, all major network environments are supported.

**Faster than HP.** On the toughest, most complex jobs, Lexmark's exclusive dynamic controller architecture delivers throughput up to two times faster than HP's comparably equipped 12,16 and 24 ppm printers.

**More adaptable than HP.** The Optra S family cleverly uses the same supplies and input options. So you can mix and match components easily. The 16 and 24 ppm models also share the same output options for even greater flexibility.

**More value than HP.** Lexmark's exclusive MarkVision<sup>™</sup> software lets you manage the Optra S printers right from your PC. Unique toner and paper gauges let you know when you're running low. So you can re-order supplies more efficiently and avoid costly downtime. Plus there are many other ingenious features all designed to help lower your operating costs. To learn more about why we're head and shoulders above HP, call 1-800-LEXMARK or visit us at [www.lexmark.com](http://www.lexmark.com).

*A bold new breed of performance printers.*

**PRINT  
LEXMARK**

# www.toolboxes

CONTINUED FROM PAGE 24

## CLARIS HOMEPAGE 2.0

CLARIS CORP.  
Santa Clara, Calif.  
(800) 544-8554  
www.claris.com

PLATFORMS  
Windows 95,  
Windows NT,  
Macintosh, Power  
Macintosh

PRICE  
\$99

**C**laris's HomePage 2.0 offers a curious mix of easy-to-use features and obscure shortcomings.

While it offers most things needed to build and manage a small Web site, it isn't well-suited for high-productivity environments.

In its second incarnation, HomePage strives to narrow the gap between itself and enterprise-class authoring tools.

Unfortunately, compared with the other applications I examined, HomePage comes in a distant second because of surprising gaps in its design. For example, it lacks database access, handles frames clumsily and lacks automated Web site fleshing-out. Because of these limitations, it's best suited for prototyping,

maintaining a small, well-contained Web site of fewer than a dozen pages or for neophytes.

HomePage is easy to learn and live with because it uses a familiar interface—that of a word processor. You start your page simply by typing in your text.

A Web page novice can design a Web page within an hour. It effectively insulates you from HTML by automatically tracking your actions and generating the appropriate HTML code.

And that is despite gaps in the product's documentation. For example, the documentation says to double-click on an HTML file to open it for editing. But in Windows, that launches your Web browser. Only after checking the "read me" file do you discover it's the program that's misbehaving, not you.

To help neophytes, Claris provides a library of more than 100 Web page templates. Unfortunately, those templates lack eye appeal. Claris could simplify the process by improving its selection of templates or adding page wizards to lead the neophyte through page creation.

But even with those shortcomings, HomePage is acceptably easy to master.

Once past the absolute beginner stage, HomePage continues to help the Web page designer. For example, its super-one-click table creator enables you to insert

a table of any size and shape anywhere on your page. You can import tab-delimited text files from Lotus Development Corp. and Microsoft Excel spreadsheets. When importing text from another program, HomePage analyzes the material to determine if it's columnar, if so, the program automatically sets it up as a table. Thanks to that automatic feature, even the most design-challenged Web page designer can create pages with professional-looking touches.

### EASY PAGE TRANSFER

HomePage makes it easy to move the completed pages onto the Web or an intranet. It automatically collates all requisite files, graphics, plug-ins, Java applets and QuickTime movies and places them in a single folder.

It then analyzes the total size of your pages, which is an advantage to companies that use service providers that have limited storage space. It establishes the connection and uploads your work to the Internet via file transfer protocol.

What it means your work can be up and available as soon as you finish working on it.

But there are some serious cons to counterbalance those pros. First, HomePage handles page frames clumsily. Frames are windows on your page that can display the contents of other com-

plete Web pages. An accepted design standard, they are a simple way to organize and display virtual armloads of content on one page.

While the program lets you create a master page with as many frames as you like, it doesn't let you put anything else on the page, such as a title, image or form. To do that, you need to resort to awkward work-arounds.

What's more, it lacks a WYSIWYG view for frames, which deprives you of a way to accurately preview the contents of a page that you put in a frame or see your result. That means you can create a page with frames, but only with great effort.

Another weakness is HomePage's lack of a Web site map. If you intend to design a large site with several dozen frames linked to one another through frames and hyperlinks, you can easily lose track of the project.

Finally, the lack of even rudimentary database access in the Windows version limits the package to serving up only static text. Claris says it plans to correct those shortcomings in an update in the third quarter. □

*Millman operates the Data Systems Services Group, an independent networking and problem-solving consultancy in Croton, N.Y. He can be reached at kmillman@ocnaimail.com.*

## UP TO THE MINUTE: Clips of recent news items in the Web development sector

■ (05/26/97) **InfoWorld**, Object Design, Inc. (ODI), an object-oriented database software vendor, struck a bundling agreement with **Symantec Corp.** ODI's ObjectStore PSE Pro for Java, an end-user database application, will ship with Symantec's Cafe line of development tools. Under terms of the agreement, ObjectStore PSE Pro for Java will be bundled with VisualCafe versions of Symantec's Cafe, Visual Cafe and Visual Cafe Pro Java tools for Windows and Macintosh platforms.

■ (05/21/97) **InfoWorld** Electric, Information Builders, Inc. (IBI) and Netscape Communications Corp. on June 3 will announce integration of Netscape's World Wide Web servers and browsers with IBI's Enterprise Data Access middleware, enhancing Web publishing by enabling multiplatform data links, according to a source familiar with the announcement.

■ (05/19/97) **InfoWorld**, **Starlight Networks, Inc.** and **Progressive Networks, Inc.** announced a strategic partnership that will let each company market the other's video and audio streaming technologies. Starlight's full-motion MPEG1 and MPEG2 video for intranet applications and Progressive's RealAudio and RealVideo could simplify development by letting users build just one application.

■ (05/14/97) **Computerworld**, IBM was first out of the vendor gate with Component Broker Connector and Toolkit, middleware products that combine transaction processing, messaging, application development and management in one package.

The robust collection of services should make it dramatically easier and faster for customers to place orders, check shipments and scan inventories online. **SUN Microsystems, Inc.**, **Microsoft Corp.**, **BEA Systems, Inc.** and **Hitachi Computer Products, Inc.** are some of the vendors expected to unveil similar products later this year, although no specific delivery dates have been set.

■ (05/12/97) **Network World**, **Network Toolkit, Inc.** expanded its suite of software tools that help users design, test and validate networks and network devices. The **Onset** software integrates application benchmarking, network stress testing and firewall testing. Onset also monitors end-to-end behavior and performance of applications under varying loads across a network, the company said. It supports Hypertext Transport Protocol, file transfer protocol, Simple Network Management Protocol and Telnet applications. Users can define multiple sessions per application, each with a different IP address

and behavioral characteristics.

■ (05/12/97) **InfoWorld**, **NetObjects, Inc.** announced availability of a free software developer's kit that lets information systems departments and third-party vendors create Java-based extensions to the **NetObjects Fusion 2.0** World Wide Web-site authoring tool. The **NetObjects Component Development Kit** lets developers enhance Fusion with extensions for database connectivity, electronic-commerce transactions and multimedia applications.

■ (05/05/97) **Computerworld**, Oracle the company's **World Wide Web-enabled Developer 2000 Version 1.4W**, which lets users port applications to run across the Internet. But to get Version 1.4W out the door, Oracle postponed delivery of Version 2.0 of Developer 2000 until the fourth quarter. It is slated to support the company's **Network Computing Architecture** and the **Web**.

■ (05/05/97) **InfoWorld**, **DeltaPoint, Inc.** said it is broadening its product line and acquiring site-management technology from **Inet, Inc.** DeltaPoint will migrate its **QuickSite** for World Wide Web-site creation with Inet's **ContentSuite** high-end management and maintenance technology. A Professional edition is expected to

ship in the fourth quarter, and an Enterprise edition is shipping in the first quarter of next year.

■ (04/28/97) **Network World**, **Alliance Group's** new **Edgeworld** programming tool set will let Visual Basic developers quickly build World Wide Web programs that encode application logic, written in Visual Basic. Edgeworld features 27 reusable application objects, runs on Windows NT 4.0 and Windows 95, and works with any Web server via **Common Gateway Interface**. **Service** is Internet Server application programming interface (API) or **Netscape Communications Corp.**'s API.

■ (04/21/97) **Computerworld**, Many tools can monitor and control employee access to the Internet and World Wide Web, but **On Technology Corp.** offers a sample policy that can help companies enforce Internet usage rules. The **Internet Usage and Security Policy** is free at [www.on.com/](http://www.on.com/).

■ (04/22/97) **IDG News Service**, **Porta Software, Inc.** and **Netscape Communications Corp.** said the two companies will integrate their object-oriented programming tools, making it easier and faster for developers to build distributed, Internet-enabled applications. □

THERE ARE TIMES WHEN THE SECOND  
BEST TECHNOLOGY JUST WON'T DO.

**N**othing's worse than your network storage system going down in the line of duty. So if you really want to protect yourself, there's only one partner to have—Symbios Logic, with its MetaStor™ line of host- and network-attached storage systems.

Because only Symbios Logic knows I/O from silicon to systems to software. In fact, we invented, and are the world's top supplier of chips for RAID systems. Even to our competitors.

So when it comes to reliable integration, we have an edge. When it

comes to squeezing out more performance, we know every angle. When it comes to upgrade paths like Fibre Channel, we're not just ahead of the curve, we *are* the curve.

Take a long look at the MetaStor DS-10 and DS-20E RAID systems and the MetaStor SH5400 intelligent storage hub, because there's no better defense when you're in the line of fire. For more information, call 1-800-86-ARRAY, or visit [www.symbios.com/meta\\_cw](http://www.symbios.com/meta_cw).



**METASTOR™**

Technologically Superior  
Network Storage Systems.

Visit Symbios Logic at  
Windows World '97  
Booth #W6455



**SYMBIOS  
LOGIC**

The Storage Connection

## In Depth

# Viruses

SOME ARE JUST ORNERY, SOME ARE DEADLY. HERE'S HOW TO HEAD 'EM OFF AT THE PASS.

By Steve Alexander

**C**OMPUTER VIRUSES, which can be destructive or merely annoying, have become an epidemic of sorts. A recent report by the National Computer Security Association says the rate of computer virus infection in corporate America nearly tripled in the past year.

Every month, more than 200 new viruses are discovered. Nearly 15,000 viruses exist, although only about 240 are "in the wild," or circulating among unsuspecting users.

Several firms that write antivirus software, including McAfee Associates, Inc. in Santa Clara, Calif., and Symantec Corp. in Cupertino, Calif., maintain a top 10 list of the most frequently reported viruses. Some of the viruses have made the list by persisting for years, and others have vaulted to fame almost overnight. All can be eradicated once they are identified, although that may be too late for the hapless end user who has lost files.

Most of the newer viruses are "macros," which means they exist inside executable programs, also called macros, that provide functions within programs such as Microsoft Corp.'s Word. Macro viruses are highly communicable, because they can be transmitted via electronic mail files that contain infected macros.

"Macros make up a vast majority of the new viruses, and they are without a doubt the biggest threat we see today," says Alex Haddon, product manager at Symantec's Santa Monica, Calif.-based Anti-Virus Research Center. As of February,

there were 369 known macro viruses. Nearly all infect Word, but a few infect Microsoft Excel, Lotus Development Corp.'s spreadsheets and its Ami Pro word processor.

The other major virus category, boot-sector viruses, live in the section of a PC hard drive that the PC reads first when it boots up. This allows boot-sector viruses to wreak malicious mischief.

Virus damage ranges from the sudden disappearance of files to the appearance of unwanted messages in the middle of printouts.

Many viruses do no direct harm. But because viruses tend to remain in circulation for years, they may cause problems because of incompatibilities with newer software.

But more destructive viruses are being created as virus writers strive for new ways to prove their skills. "Two to three years ago, about 10% of viruses were destructive. Today, it's about 35%," Haddon says.

Other destructive programs, called Trojan horses, are sometimes mistaken for viruses. In April, the U.S. Department of Energy's computer security response team at the Lawrence Livermore National Laboratory in Livermore, Calif., warned users of a program that was

circulating on the Internet called AOL4FREE.COM.

Although the program was supposed to provide fraudulent free accounts on AOL, it actually deleted all files on a PC's hard drive, then displayed a vulgar message. But unlike a virus, a Trojan horse program won't work unless the user is fooled into running it, the energy department says.

Because top 10 virus lists are based on the complaints received from users, the McAfee and Symantec lists differ slightly. What follows is a compilation list of several top viruses.

### Notorious pests

**MONKEY.** Also known as Stoned, Empire.Monkey.A, this virus makes it seem as if your hard drive has crashed, says Jimmy Kuo, director of antivirus research at McAfee Associates. "This virus generates lots of panic calls, because the hard drive looks like it's gone bad, even though it hasn't," Kuo says.

"People think the computer's hard drive has failed, because Windows won't run with Monkey present," Haddon says. "When you try to boot Windows, it locks up the machine. You can boot from a floppy, but you can't find the hard drive."

**CONCEPT.** One of a new generation of Microsoft Word macro viruses. The virus changes the save-as function, causing documents to be saved to the template directory rather than the document directory. This confuses users because they don't know what happened to the most recent version of a file. The virus also can copy itself from one document to another and delete files. It's easily spread when Word documents are sent via E-mail.

Although most viruses take three to four years to reach the top 10 list, Concept hit the charts in a record six months, according to Haddon. There are now 40 different strains of the first Concept virus, called Concept A.

**ARTHEX.** A nondestructive boot-sector virus that can cause accidental harm to files because of incompatibilities with newer software.

**NYB.** This virus isn't destructive, but it is widespread. Although NYB was reputed to physically damage a hard drive by banging the read-write head against the disk, that's a myth, Haddon says. "There is no virus software code that will cause the head to hit the disk," he says.

Less destructive viruses such as NYB tend to proliferate, because they don't call attention to themselves. Kuo says, "Michelangelo, a virus that wiped out a segment of a PC's hard disk on the famous painter's March 6 birthday, caused so much trouble that it has been largely eradicated, he says.

**ARTICHOKE.** It wipes out information stored on a programmable CMOS chip containing a PC's configuration data. There are two versions of Artichoke: one that doesn't work and one that does. Even when it works, the virus causes no real destruction, because configuration settings can be restored, Haddon says. "But for a computer novice, it can be devastating," he says.

**WAZL.** There are now 37 versions of this Word macro virus, some of which delete files or format the hard drive, which destroys the information on it, Haddon says. Less harmful versions may randomly reset a PC's screen colors.

**FOUN.** This virus causes a clicking noise in the PC's keyboard on the 18th day of every month. It doesn't harm a PC's hard drive, but it may corrupt data on floppy disks it infects.

**STEALTH.** It causes no direct harm, but after the computer is turned on, the virus uses its control of main PC semiconductor memory to hide its presence. It can affect some Windows operations.

**MMMA.** A Word macro virus that can delete files. A Cross-platform virus, it can infect systems running Windows 3.1, Windows 95, Windows NT and Macintosh operating software.

**JURIN.** A "multipartite" virus, meaning it can infect files as well as the hard disk's boot sector. It may cause memory conflicts.

**ONE.HALL.** One of the most destructive viruses because it can mutate, making it difficult to identify and eliminate. One.Hall encrypts the hard disk so only the virus can read the data there. When the disk encryption is half-completed, it flashes "One.Hall" on the screen. "If you try to remove the virus without the proper antivirus software, the data is forever gone because you lost the encryption key," Haddon says.

**SAT.906.MIAS.** It doesn't cause damage but is incompatible with some PC memory management software. The virus is widely reported in Mexico.

**OPTFL.** Also known as Jack Ripper, it corrupts data written to a PC's hard disk about one time out of a thousand.

Alexander is a freelance writer in Edina, Minn.



# Take charge of your with this **FREE** tool

<http://careeragent.computerworld.com>

Use these **FREE** features at <http://careeragent.computerworld.com>

- Search for specific learning resources
- Describe your training and education interest areas
- Optionally receive email updates of new learning resources that meet your interest areas
- Describe your current or ideal I.T. position
- Assess your skills relative to the skills required for that position
- Calculate a personalized "skills gap" to compare your fit to that position
- Record work experiences for use in skills assessment

New From:

**COMPUTERWORLD**

# I.T. skills & training

**Search Thousands of Course Listings From:**

Learning Tree International

Wave Technologies

Hewlett-Packard Educational Services

Boston University Corporate Education Center

Interpersonal Technology Group

IREC

Non Review

A black and white silhouette of a person wearing a backpack, walking towards the left. The person is positioned on the right side of the page, against a light background.

# CAREER AGENT

[careeragent.COMPUTERWORLD.com](http://careeragent.COMPUTERWORLD.com)



**June 8 - 11, 1997**

**Marriott Rivercenter Hotel  
San Antonio, Texas**

**Reserve your place  
at the hottest conference  
of the year.**



**Call 1-800-488-9204 for info**

## IT Careers

# SKILLS THEY'D KILL FOR

By Alan Radding

Things are getting sticky, trying to find information systems professionals with the hottest skills? You aren't alone.

IS hiring managers say they're working up a sweat trying to find and retain those skills. But despite often-frantic efforts to find specific technical skills, IS managers aren't relaxing their requirements for the personal and communications skills required in their team-oriented organizations. *Computerworld* asked six IS hiring managers what skills they're most desperate for and their experiences in trying to find people with those skills.



**BOB WALSH**  
Systems and programming manager  
Boise Cascade Office  
Products, Itasca, IL  
(200 IS staff members; mainframe, AS/400 and LANs)

**CW: What technology skills are in greatest demand?**

**WALSH:** The mainframe market has been reinvigorated with improved price/performance and new software, so we keep looking for mainframe skills: Cobol, IMS, DB2. We have a huge AS/400 program, so we need RPG people. We're just starting to poke around with the Internet, which requires people with C and Internet skills.

**CW: What skill issues keep you awake at night?**

**WALSH:** I'm scared to death about how we'll get people for year 2000 work. Every Cobol programmer thinks he's worth \$95,000. The consulting firms outbid me for people.

**CW: How much time do you spend on staffing issues?**

**WALSH:** I'm supposed to spend about 5%, but in reality I'm spending 20% to 25% on recruiting. We're hoping to add 60 to 70 people next year between internal growth and replacement of contractors.

**CW: What specifically are you doing?**

**WALSH:** We just changed recruiters.

We have an aggressive job fair approach, and we're doing college recruiting for the first time. We've started using The Monster Board on the Internet. We're looking at radio and billboard advertising. Heck, I'd stand at the train station and pass out fliers.

**CW: What skills are going to remain in demand over time?**

**WALSH:** The year 2000 work isn't going to end on Jan. 1, 2000. The mainframe will stay around awhile, and so will the AS/400.

**DORIS DENT**

Vice president of executive support  
United Services Automobile

Association, San Antonio  
(2,000 information technology staff members; mainframe, Windows NT and Oracle Corp. database)

**CW: What are your greatest skill demands?**

**DENT:** We're developing new client/server systems and looking for C++, Visual Basic and object-oriented skills. We also need people who know Windows, Microsoft [Corp.] Exchange, Oracle and mainframe to client/server integration. On the mainframe side, we're looking for Cobol, IMS and DB2.

**CW: How hard is it to fill those spots?**

**DENT:** Harder than before. There are  
Skills, page 95



## IT Careers

THEY'D  
KILL FOR

By Alan Radding

Things are getting sticky, trying to find information systems professionals with the hottest skills? You aren't alone.

IS hiring managers say they're working up a sweat trying to find and retain those skills. But despite often-frantic efforts to find specific technical skills, IS managers aren't relaxing their requirements for the personal and communications skills required in their team-oriented organizations. *Computerworld* asked six IS hiring managers what skills they're most desperate for and their experiences in trying to find people with those skills.



**BOB WALSH**  
Systems and programming  
manager  
Basie Cascade Office  
Products, Itasca, Ill.  
(200 IS staff members, mainframe,  
AS/400 and LANs)



**CW: What skill issues keep you awake at night?**

**WALSH:** I'm scared to death about how we'll get people for year 2000 work. Every Cobol programmer thinks he's worth \$95,000. The consulting firms outbid me for people.

**CW: How much time do you spend on staffing issues?**

**WALSH:** I'm supposed to spend about 5%, but in reality I'm spending 30% to 25% on recruiting. We're hoping to add 60 to 70 people next year between internal growth and replacement of contractors.

**CW: What specifically are you doing?**

**WALSH:** We just changed recruiters.

We have an aggressive job fair approach, and we're doing college recruiting for the first time. We've started using The Monster Board on the Internet. We're looking at radio and billboard advertising. Heck, I'd stand at the train station and pass out fliers.

**CW: What skills are going to remain in demand over time?**

**WALSH:** The year 2000 work isn't going to end on Jan. 1, 2000. The mainframe will stay around awhile, and so will the AS/400.

**DORIS DENT**

Vice president of executive  
support  
United Services Automobile



Association, San Antonio  
(2,000 information technology staff  
members, mainframe, Windows NT and  
Oracle Corp. database)

**CW: What are your greatest skill demands?**

**DENT:** We're developing new client/server systems and looking for C++, Visual Basic and object-oriented skills. We also need people who know Windows, Microsoft [Corp.] Exchange, Oracle and mainframe to client/server integration. On the mainframe side, we're looking for Cobol, IMS and DB2.

**CW: How hard is it to fill those spots?**

**DENT:** Harder than before. There are  
Skills, page 95

**CW: What technology skills are in greatest demand?**

**WALSH:** The mainframe market has been reinvigorated with improved price/performance and new software, so we keep looking for mainframe skills (Cobol, IMS, DB2). We have a huge AS/400 program, so we need RPG people. We're just starting to poke around with the Internet, which requires people with C and Internet skills.

## Ever create a system that sent a sewing machine from San Francisco to Singapore?

It's just business as usual at Airborne Express.

We are a multi-billion dollar international company with a commitment to inventing to quality people and technology. As one of the fastest growing of express carriers in the industry we provide the fastest solutions that transport our million packages daily to more than two hundred countries worldwide. Through the application of leading technology, we are creating responsive solutions for our clients' distribution challenges. Combining the best elements from across the board—distributed PC systems, in COROL, to Oracle, to TQP/P.

It all adds up to great service for our customers and outstanding information systems opportunities for you. From midlevel to client-server and object oriented environments, Airborne Express is the place to keep your IT's career moving. Check out the following opportunities:

### Mailing/Express COROL - Analyst

EDI, Marketing, International Operations and Finance, and Global Shipping applications. Must have 3+ years COROL II development using a systems development lifecycle/Experience with CCS, TSO/VS, VSAM, MVS, JCL Job # CW2104

### Visual Basic Developer

Participate in the design, development and implementation of our PC shipping system. Lightstep. Must have 4+ years of Visual Basic development experience. We 3.2, MVS, Win 95/Expert knowledge of Visual Basic, experienced in C++ development. Windows API, LAN local network development, and data communications using AS/400 & TQP/P protocols. Job # CW2200

### Distributed Application Developer

Must have 3+ years application development experience/Experience with COROL II, Visual Basic, PowerBuilder, distributed applications, VSAM files and database concepts. Job # CW2202

### Payroll Applications Developer

#### One Payroll system

Includes support of existing systems as well as analysis, design, development and implementation for new payroll sub-applications. Must have 2+ years systems development and maintenance in a large scale MVS environment/Experience in distributed COROL II programming/Excellent oral and written skills. Job # CW2261

### Technical Architect

Provides consulting support to distributed systems development project teams. Provides direction in the use of LAN/WAN technology, Unix, Oracle, MVS, Network, and AI technology. Must have 4+ years designing and implementing large-scale systems utilizing distributed technologies, including Unix, Netware, Windows, and structured DBMS's. Job # CW2237

These positions are located at our corporate headquarters in Seattle, Washington. Relocation assistance available. Send your resume including job # if no telephone response, Information Systems Recruiting, PO Box 642, Seattle, WA 98111. Fax (206) 284-4245. Equal Opportunity Employer. Email (USCIS not only please): [40100001@airborne-express.com](mailto:40100001@airborne-express.com)

**AIRBORNE  
EXPRESS.**

Visit our Web Site at: [www.airborne-express.com](http://www.airborne-express.com)

The Corvids Group provides a broad range of strategic information technology consulting and systems software development services to medium and large corporations in the Northwest.

**Professional/Executive Computer and Systems Analysts**  
We are currently seeking individuals with COROL, CCS, JCL, and TQP/P experience to join our team. We offer a competitive salary and excellent benefits package. Send your resume to: Corvids Group, 2210 130th Ave NE, Suite 200, Redmond, WA 98052. Tel: (206) 880-4000. Fax: (206) 880-4070. E-mail: [corvids@corvids.com](mailto:corvids@corvids.com)

#### Additional Opportunities

• Web Technology Development  
• Systems Software Development  
• Linux Server Development  
• Database Administration

Benefits include 401K plan, fully paid medical insurance and comprehensive compensation. Send a resume describing your skills along with three references along with your resume to: The Corvids Group, 2210 130th Ave NE, Suite 200, Redmond, WA 98052. Tel: (206) 880-4000. Fax: (206) 880-4070. E-mail: [corvids@corvids.com](mailto:corvids@corvids.com)

Start  
your  
day...



**COMPUTERWORLD**  
[www.computerworld.com](http://www.computerworld.com)

## A world of leadership.

## A world of opportunity.

## The world of Motorola.



Motorola, a Fortune 50 company and a world leader in advanced electronics, has the following immediate career opportunities in our Corporate Computer Service Center located in Scottsdale, AZ. Corporate Computer Services is a major supplier of 24x7 production services to mainframe and distributed UNIX users within Motorola worldwide.

### Technical Services

While providing application technical support, you will integrate new and existing technologies and support multiple project applications, software testing, and integration processes. We require an in-depth knowledge of MVS, TSO, SPS, DB2 and JCL, UNIX, Internet, Process Controls and a BSC is preferred. CSE, SEI and ISO knowledge is preferred, or an experience with NOMAD and the Internet.

### Computer Application Programmer/Analysts

You should have the ability to deliver computer-related automated solutions in distributed system business units. You will be responsible for Software Development Life Cycle (SDLC), which includes: requirements gathering, systems analysis, system design, coding/testing and implementation. Knowledge in the following areas is desirable: system administration for NT and/or UNIX, Object-oriented methodologies, C/C++, Perl, HTML, JAVA and GUI programming. A degree in Computer Science or equivalent and a minimum of 5 years of experience in computer program development or software programming is required. Position is very team-oriented and will interact with various groups within Motorola.

### Technical Support Analysts

We require a BA/BS in Computer Science, 3 years of experience working with the Symantec INTCBOT and Interactive Voice Response System, and 1 year supporting Action Support System. Fluency with telephone TDD system is essential.

### Technical Services Programmer/Analysts

You will perform application, technical and customer support, support multiple projects, and identify customer requirements. We require a strong knowledge of CA-Enduser, MVS, SPS, and JCL. Knowledge of DB2, UNIX, JCL/PLP, and process and quality solutions is preferred as is a BSC.

### SAP Systems Integrations/Architectural Specialists

While generating analysis documents, you will support a distributed platform and SAP technical architecture. We require a BSC along with 5 years of experience. You'll also need project management, leadership, requirement gathering and technical analysis skills, and UNIX, SAP BASIS, and technical architecture experience.

### UNIX Administrators

While performing UNIX administration in a multi-platform environment, you will provide software/hardware problem analysis, evaluate solutions to meet customer expectations and develop system security measures. We require a BSC and at least 5 years of experience. SAP or NT experience is preferred.

All positions are located in Scottsdale, AZ. For consideration, please send your resume, indicating position of interest, to: Motorola Corporate Staffing, Dept. PM001, 1303 E. Alhambra Rd., Scottsdale, AZ 85261. Fax: (602) 596-4488. An Equal Opportunity/Affirmative Action Employer. We welcome and encourage diversity in our workforce.



**MOTOROLA**

What you never thought possible.™

**COMPUTERWORLD**  
**FAIR**  
**Campus**  
**Edition**

Issue:

October 31, 1997

Advertising Deadline:  
September 17, 1997

1-800-343-6474, ext. 4000



# SKILLS THEY'D KILL FOR

CONTINUED FROM PAGE 93

fewer 15 grads coming out of college. We're going to more job fairs and expanding the list of colleges we recruit from. We pay competitive salaries, so we're still able to fill our spots.

**CW: What skills do you advise people to develop?**

**DENT:** They should learn C++ and the Internet technologies, or any of the technologies I named. But don't forget that employers look for well-rounded people. Everybody works in teams, so you have to have communications skills.

**WENDY BELSKY**

Senior vice president of human resources  
The Chase Manhattan Bank  
Corp., New York  
(12,000 IT staff members; mainframe, client/server and Internet technologies)



**CW: What are the hot IS skills at Chase?**

**BELSKY:** We mirror the market client/server, the [World Wide Web] and, further down the road, object-oriented [systems]. We also have a year 2000 program under way. In the area of client/server technology, we're looking for Visual Basic and [PowerBuilder, Oracle, Sybase, [Microsoft] SQL Server and Informix [Software, Inc. database skills]. For the Web, we're looking for Java and ActiveX. For operating systems, we use Windows NT on the desktop, with Windows 95 on laptops and some desktops.

**CW: What is your long-term skills focus?**

**BELSKY:** Java and ActiveX will be very important in the long term.

**CW: How aggressively are you recruiting?**

**BELSKY:** We don't have to sell hard to attract people to Chase. We pay extremely competitive salaries and provide, on average, 15 days of training each year. We have flexible work arrangements. Our objective is to attract and retain the best workforce. We recruit entry-level people on college campuses.

**CW: What do you worry about in terms of new hires?**

**BELSKY:** We have to constantly rethink our strategies. The technologies keep changing, so we have to keep changing how we recruit and keep people. I'm not worried, but we're not complacent either.

**CW: How important are nontechnical skills?**

**BELSKY:** More important than ever, especially at Chase. We look for core leadership and management competencies. We want people who can organize, mobilize and motivate people. We also want people who share our values about customer focus, teamwork, respect and quality.

**ALFRED SPANGENBERG**

Vice president of emerging technology research  
The Prudential Insurance Company of America, Roseland, N.J.  
(5,800 IT staff members; mainframes, worldwide distributed environment, Windows NT, 64,000 desktop systems and advanced client/server development)



**CW: What skills are in the greatest demand from where you sit?**

**SPANGENBERG:** We're experiencing a very big demand for basic LAN administration skills, particularly Windows NT for our client/server systems, and Unix administrators for our large database management systems and firewalls. In application development, we're looking for C++, PowerBuilder and Visual Basic. We're also looking for CTI [computer telephony integration] skills, Lotus [Development Corp.] Notes and Domino, and people with imaging and workflow skills, particularly if they know Eastman [formerly Wang] Software.

**CW: Aren't some of these technologies obscure?**

**SPANGENBERG:** We think Lotus Notes/Domino will be here over the long term and grow in the future. Workflow and imaging is a specialized niche, but it will be very important for several years.

**CW: What are you doing to fill your staffing needs?**

**SPANGENBERG:** We're trying to retain people we already have. And we held a weeklong open in May where we invited candidates and let them walk through exhibits about various projects. We brought in prominent industry speakers. It was a very big event. We intend to make it an annual thing.

**CW: What projects did you exhibit?**

**SPANGENBERG:** We had the CTI project, where we are building our next-generation call center. We showed the imaging and workflow project using the Eastman software. We also had our intranet and Internet initiatives.

**CW: How much effort are you putting into recruitment?**

**SPANGENBERG:** We're putting in a lot more energy than in the past, but we're not desperate. We're using more and different forums. We're building centers of excellence, which are groups of people focused around a specific topic. We create competency centers around technologies such as Notes or workflow.

**CLAYTON MARSH**

Vice president of systems development  
First National Bank of Omaha  
(350 IS employees; mainframe, CICS, Cobol and Windows NT)



**CW: What technical skills are hot in banking in your region of the Midwest?**

**MARSH:** There is a shortage of tech-

nology skills overall in the region. At the bank, we're looking for anything that has to do with the Internet and Web page development, particularly home banking.

**CW: What are some specific profiles of people you would "kill" for?**

**MARSH:** Cobol is one. We have a lot of year 2000 work going on and need Cobol and CICS. There are a lot of companies in this area with legacy systems that have this problem. We're looking for Windows NT LAN people. Tandem [Computers, Inc. skills] are also very hot.

**CW: How has demand affected salaries?**

**MARSH:** They've gone up considerably across the board. We have to compete with the East and West coasts, where the salaries are much higher. I've even heard of companies paying extra premiums and bonuses, although we don't do that.

**CW: Are you doing anything special to address staffing issues?**

**MARSH:** I'm spending a lot more of my time than before. Omaha just had a big [IT] event that featured a panel on recruiting. The thing was kicked off by the governor. We think of ourselves as the Silicon Prairie, but people on the East and West coasts don't know it yet.

**CW: Any specific projects you'll be staffing in the coming months?**

**MARSH:** We're cranking up an intranet here. We're also starting a remote banking initiative. We'll need skills for both.

**KURT DAHL**

Vice president of IT  
The Seattle Times  
(40 IS staff members; mainframe, IS/6000, SAP, Unix, Web and Novell, Inc.)

**CW: What technology skills are in demand in the Northwest?**

**DAHL:** Everything—mainframe, Cobol, PCs and Unix. The Web has exploded here as everywhere else. Since we're a Novell environment, we don't have any interest in Windows NT, although other places in the area do. I just hired some Cobol programmers, and I still need more.

**CW: What are you doing to get people?**

**DAHL:** We're starting by focusing on keeping the people we have. I'm putting together a retention plan that includes things beyond salary—things like telecommuting and flexible training. We're even considering something like a sabbatical program.

**CW: What areas are you particularly worried about?**

**DAHL:** Staffing for the year 2000 problem is taking a great deal of time. We still have a lot of old legacy systems. Our Web site is growing, too, so we'll be looking for people there.

**CW: What does this do to your salaries?**

**DAHL:** We try to compete at the 75th percentile, but it's hard. We installed SAP. However, there is very high de-



CLIENT/SERVER	SALARY PREMIUM (%)
PowerBuilder	11%
Oracle	11%
Sybase SQL Server	10%
Microsoft SQL Server	10%
Microsoft Exchange	9%
C++	9%
Unix	9%
Lotus Notes	9%
Windows NT	9%
Windows 95	8%
C	7%
Informix	7%
Microsoft Visual Basic	6%

MAINFRAME	SALARY PREMIUM (%)
IMS	9%
DB2	9%
Cobol	7%
INTERNET	SALARY PREMIUM (%)
Java	8%
ActiveX	N/A

Source: 1997 projections, according to approximately 90 IS hiring managers in Computerworld's 1996 Skills Survey.

mand for SAP people. We've had to be creative in compensation.

Rodding is a freelance writer in Newton, Mass.

**COMPUTERWORLD**  
For links to help in your job search or skills development, visit our Web site at [www.computerworld.com/jobs](http://www.computerworld.com/jobs)

## IT CAREERS



## Are your skills being underutilized?

Andersen Consulting, a global firm engaged in business transformation, has opportunities for experienced professionals throughout our offices nationwide. Currently, we are seeking the following candidates for our Technology organization:

## Technology Managers

**Technical skills and knowledge in a client/server environment include:**

- 6+ years technical experience developing large or complex systems in a distributed computing environment required
- Representative architecture skills including two or three tiered architectures, synchronous/asynchronous messaging, data to application partitioning and distribution, messaging, multimedia, object design and programming, JAVAX, data warehousing, and reworking a comparison of these skills desired

**Knowledge of one or each of the following:**

- Languages: C, C++, Smalltalk, HTML, JAVAX
- OS: DB/Tools, PowerBuilder, Visual Basic
- OO Application Development Environments: VisualWorks, PARTS, Forte NextSTEP, Visual Age, or equivalent
- WWW Development Environments: Microsoft, VisualWeb
- Operating Systems: UNIX, Windows NT, OS/2
- RDBMS: Oracle, Sybase, Informix, DB2
- Middleware: Compuserve, LAN, TCT/90, Cellular, VSAT, Wireless, Call Center Technology (Computer Telephony Integration)

*These positions also require demonstrated project management skills and the flexibility to travel.*

If you have a college degree and want to join a fast-growing, leading edge group of professionals, forward your resume and salary history to: Andersen Consulting LLP, 5215 N. O'Connor Blvd, Suite 2100, Irving, TX 75039. An Equal Opportunity Employer. Fax 972/402-7882.

Please visit our website at [www.ac.com](http://www.ac.com) for more information about Andersen Consulting.

**ANDERSEN  
CONSULTING**

Andersen Consulting is an Equal Opportunity Employer  
©1997 Andersen Consulting

Find  
training  
now.  
[careeragent.com](http://careeragent.com)



The  
COMPUTERWORLD

DOES  
YOUR FIRM  
INVITE  
YOU TO  
"MAKE AN IMPACT",



It's all too common: Consultants who are fired up to make an impact, but not given the latitude to use their full potential. At Price Waterhouse, we won't keep you in neutral. Award-winning training & development, an innovative approach to career advancement that gives you more options, and high-profile engagements with top-tier clients give you a clear path to make a significant impact on the direction of global business. It's not surprising that Computerworld ranks us as both one of the "Top Ten Best Places to Work" and as a leading Systems Trainer.

As a result of explosive growth, we have exceptional career opportunities for professionals with hands-on experience in any of the following areas:

- PeopleSoft, Oracle or SAP Package Implementation
- Other Financial, HR or Supply Chain Packages (e.g. Baan, Lawson, Managements, I2, J.D. Edwards, DBS)
- Sales Force Automation Systems
- Data Warehousing
- Electronic Commerce
- C/S Development or Database Administration in Oracle, Informix or Sybase
- Three-Tier System Architecture, Unix System Administration, or GUI tools

Travel will be essential to your success.

For consideration, please send your resume, indicating location preference, to: Price Waterhouse, Management Consulting, Dept. LG/CWS2, P.O. Box 30004, Tampa, FL 33603-3004. Fax: 1-800-489-7828 or email: [PW\\_LG@deloitte.com](mailto:PW_LG@deloitte.com) (see file attachments, please). For additional information, visit our web site at <http://www.pwc.com>. We are proud to be an equal opportunity employer.



**Price Waterhouse**  
Mind & Muscle™

Opportunities Available in the Following Areas: Atlanta, Baltimore, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Houston, Indianapolis, Los Angeles, Minneapolis, New Jersey, New York metro area, Philadelphia, San Francisco, San Jose, Washington, D.C. area.

© 1997 Price Waterhouse LLP



COMPUTERWORLD

**FALL  
Campus  
Edition**



Issue:  
October 31, 1997

Advertising Deadline:  
September 17, 1997

1-800-343-6474, #800



<http://careers.computerworld.com>

Applications: [computerworld.com](http://computerworld.com)



## EXECUTIVE TRACK

**Robert Kozak** was named vice president and chief information officer at CNF Transportation, Inc. in Palo Alto, Calif. He was vice president of MIS at Ryder System, Inc. and CIO at its Ryder Transportation Services division.

**John M. Keel** was appointed executive vice president and CIO at Barknorth Group, Inc. in Burlington, Vt. He was a senior vice president in the technology services group at Key Services Corp. in Cleveland, a division of KeyCorp.

**Jeffery Marshall**, 44, was named vice president of information and technology at The Men's Warehouse, Inc., a men's clothing retailer in Fremont, Calif. Marshall comes to The Men's Warehouse after running a consulting practice for two years. He previously was executive vice president and chief operating officer at Johnson Controls, Inc. and vice president of the data network division at Sprint Corp.

**Bill Krivosnik** was named to the newly created position of senior vice president and CIO at GE Capital IT Solutions, a Stamford, Conn.-based value-added reseller and systems integrator.

**Hank Leingang** was named CIO at Bechtel Group, Inc., a privately held construction firm in San Francisco. Leingang, 47, was CIO at Viacom, Inc. At Bechtel, he will be responsible for coordinating information technology operations across 140 countries and seven continents.

**John Panicker**, a 30-year IT veteran, was named CIO at The Arbitron Co. Prior to joining the Columbia, Md.-based media ratings service, Panicker spent six years at NationsCredit Corp. in Stamford, Conn., where he served as director of MIS and development. Panicker replaces **Stan Burrows**, who left Arbitron to pursue other interests.

**Bill McFarlane** was named vice president

of retail consulting at Advanced Distribution Systems, Inc. in Lanham, Md. He was vice president of information systems at The Disney Store, a retail chain operated by The Walt Disney Co., in Orlando, Fla.

**Terry E. Morgan**, 40, was named a senior practitioner at Deloitte & Touche's Carr's Food Retail Technology practice in Atlanta. He was director of IT at Food Lion, Inc. in Salisbury, N.C.

**Alden V. Munson Jr.** was named senior vice president and group executive for IS at Litton Industries, Inc. in Woodland Hills, Calif. Munson, 55, who was vice president for operations at TRW, Inc., replaces **Michael R. Brown**, 56, the acting group executive at Litton's IS unit. Brown remains president and COO at Litton, an

electronic and defense systems outfit.

**Susan S. Kozik**, 39, has joined The Penn Mutual Life Insurance Co. in Philadelphia as vice president of IS and chief technology officer. She reports to **John Albanese**, vice president of customer service and IS. Kozik was vice president of technology systems at Cigna Corp.

**Patricia Nunn Merriam** was named manager of information management at GE Electrical Distribution and Control, a Plainville, Conn.-based division of General Electric Co. Merriam, 37, was a division CIO at Procter & Gamble Co.'s cosmetics unit in Hunt Valley, Md.

## Training CDs vary widely in quality

By Esther Schneider

**W**HEN YOU CAN'T get live technical instruction and books aren't enough, you might want to turn to CD-based multimedia training courses. The training courses can be broken into two broad categories. Some focus more on the multimedia entertainment components of training; they appeal to computer users who need to be amused into learning new subjects. Others are "books plus," text with enhancements that make it easier for a student to quickly grasp a subject.

I examined three training CD-ROMs that use those different approaches, because each publisher has different course titles in addition to those mentioned here. I looked at the methodology of these training CD-ROMs more than the specific course content.

**REVIEW:** More style than substance in Windows 95 trainer. Individual Training for Windows 95. Individual Software Co. Pleasanton, Calif. \$99. This product definitely puts its



Individual Training for Windows 95

attention at the entertainment end of the scale. The application talks to you constantly—there's no way to get it to shut up. I couldn't find a "pause" button, which was irksome when my telephone rang. Despite the apparent range of topics covered (from sending faxes to customizing the task bar), I found the content too lightweight, especially for computer users with any level of experience. I was also annoyed by what I considered to be too much "marketing." Instead of training—the application kept telling me how great Windows 95 was and how successful it was going to be.

In the CD's favor, its pre- and postcourse assessment tests have plenty of options. If you're looking for help on a particular feature, Individual Training's package makes it easy to jump to the right, general topic. Unfortunately, once you get to the right area, you have no way of determining the length of time before you get the item of information you seek.

Hands-on exercises are adequate but unremarkable. Users with minimal Windows 3.x skills who want to come up to speed with Windows 95 may find this CD useful, but I wouldn't rush out to get a copy.

**REVIEW:** Notes Basics is good for new or upgrading users. Lotus Notes 4.0 End-User Basics. ExcelsTrain Corp. Alpharetta, Ga. \$99.



This training product also takes the entertainment approach, but I liked its implementation much better. It uses a cartoon trainer named Fred, which turned out to be less irritating than I expected.

The course feels more organized, perhaps because each training segment introduced the topics to be covered, and I could skip around quickly. The procedure test is integrated with the course material; items I'd gotten wrong were highlighted in the course outline, reminding me to give special attention to those chapters.

Still, the material was very

introductory, perhaps because entertainment and graphics take up so much time, but then this is the Basics class. Nonetheless, the "entertaining" aspects proved to me after a while: I could live my life without hearing, "Exiting Notes can also be exciting!"

ExcelsTrain does have a pause key (which my telephone correspondents appreciated), and you can turn off the sound. Unfortunately, when you switch to text-only instruction, much of the content is left out. You won't realize this until you're instructed to try an operation you never learned. The hands-on exercises are otherwise well-managed, referring to items you learned more than an instant ago.

This package is definitely suited to new and upgrading Lotus Notes users, especially those who just want to get to work without becoming a guru on the topic.

**REVIEW:** Java Cyber Classroom gets top grade for usefulness. Java Multimedia Cyber Classroom. Duffell & Duffell. Princeton, N.J. \$99. Upper Saddle River, N.J.

0898 0-03-27794-0

\$69.95

Java Multimedia Cyber Classroom is, without a doubt, the best of the bunch.

The book is well-written and grabbed my attention. The user interface is superb—I could simply read online in book format or focus on the attributes I considered most important. The Cyber Classroom highlights figures, bug-hunting tips, software quality recommendations and other perspectives that are left out of the other training CDs.

Multimedia is used to enhance the course material, not replace it. Symantec's Café Lite is included, so the code samples provided are live; you can edit them and really see the results.

My only serious criticism is that the training CD works only on Windows 95 or Windows NT, a limitation given the cross-platform appeal of the subject matter. If you have any interest in learning Java, you should definitely check out this package.

Schneider is a freelance writer in Scottsdale, Ariz. She can be contacted at [esther@prismnet.com](mailto:esther@prismnet.com).





**Data Architects & IT Systems Analysts**  
**Programmers/Analysts**  
**UNIX Systems Administration**  
**Manager, Client Services**  
**Manager, Applications Delivery**  
**IT Asset Manager**  
**Manager, IT Financial Controls**  
**Manager, IT Facilities Planning**  
**Program Managers**  
**Systems/Oracle DBA's**  
**Platform Engineers**  
**Sc. Programmers**  
**Sc. Business Analysts/Project Leaders**  
**Sc. Systems Engineers/Project Leaders**  
**System Engineers**  
**Software Test Engineers**

Organization: Sprint PCS is a partnership of Sprint Corporation, a global communications company, and three of the largest cable television companies in the U.S. - Telecommunications, Inc. (TCI), Comcast Corporation, and Cox Communications.

Mission: To deliver the future of wireless communications called Personal Communications Services (PCS) over America's only 100 percent digital, 100 percent PCS wireless technology wireless network, with licenses covering nearly 260 million people.

Headquarters: Our corporate headquarters are located in Kansas City, one of the most affordable housing markets in the country. Kansas City offers a unique blend of opportunities, from fine arts, excellent school systems and cultural excitement, providing an ideal environment in which to raise a family.

IT Environment: Sprint PCS provides WAN coverage nationwide in its field operations and affiliates, which are connected via Frame Relay circuits, the RISC personal area and Cisco Systems network infrastructure components. The networks and servers are monitored by HP Openview, BMC Patrol, and CA-Incidents Agent/Alerts. Sprint PCS business customers are supported primarily by client/server applications on an HP/SCO model server running the HP-UX, IIS, operating system. Oracle provides the standard RDBMS software, and Oracle Designer 2000 or Cayman Studio and GaussDB are used for database/data modeling design. Current application development/maintenance uses Java, HTML, CGI, and Developer 2000 and Microsoft Visual Studio.

Keywords: Sprint PCS offers unprecedented opportunities as well as continuing compensation and benefits to selected IT professionals with a proven record of excellence and an entrepreneurial drive who want to help shape the future of telecommunications.

Send your resume to Sprint PCS, Dept. CWK207, P.O. Box 32547, Midland, MO 64601, Kansas City, MO 64108. Mail to 480-495-2248 (toll-free). E-mail: [pcscareers@midland.sprint.com](mailto:pcscareers@midland.sprint.com). Information only or AEOE (Affirmative Employment Opportunity) only. No phone calls, please. We are proud to be an EEO/AAE employer. M/F/D/V. Also, we maintain a drug-free workplace and perform pre-employment substance abuse testing.



Sprint PCS™



September 15, 1997  
Fairview Park Marriott  
Falls Church, VA



Host:  
October 31, 1997  
Advertising Deadline:  
September 17, 1997

For information: 1-800-488-9204

1-800-343-6474, ext.



<http://careers.computerworld.com>

## Director of Technical Services

Our client, a well-recognized managed care organization, is seeking a project-driven professional to join their Southeastern-based corporate offices as Director of Technical Services.

In this role, you will provide direction regarding mainframe and midrange systems engineering efforts to ensure a high-quality, cost-effective processing environment that supports corporate and business goals. Areas of technical accountability will include: operating, transaction and EDI systems, systems software and interfaces, database and data storage management, applications architecture development, maintenance support, and vendor management/negotiation.

In addition, you will be expected to provide strategic/capacity management IT plans, maintain acceptable levels of system functionality and stability, and oversee systems support, repair and upgrade activities. Responsibility for systems and staff performance, and a \$10 million departmental budget, will also fall into your domain.

You may be qualified for this exceptional opportunity if you possess 7-10 years of experience in the management of a diversified hardware/software engineering, production support and operations team working within a multipplatform environment. A strong track record of effective team leadership, management, development and motivation across the entire project lifecycle is a must. Your background should also demonstrate strong strategic planning and technical server skills, as well as the ability to determine business processing needs and solutions. Superior communication, negotiation and problem-solving skills are equally essential in order to succeed effectively with users, vendors and internal personnel. Previous experience in a project leadership role will be to your advantage.

A competitive salary and benefits package will be provided to the successful candidate. For immediate, confidential consideration, please submit your resume and salary expectations to: Bernard Hodges Advertising Reply Service, Dept. DTS-173, Reference # SGS-1341, 280 W. Canton Ave., Suite 276, Winter Park, FL 32789. Equal opportunity employer M/F/D/V.

## TECHNICAL SPECIALIST

The second largest semiconductor plant in the northwest suburbs of Chicago is seeking a highly qualified candidate for a Technical Specialist, Design 15. It is the second largest semiconductor plant in the state of Illinois and operates 15 advanced 15 elementary and 4 junior high. Excellent benefit package provided.

### ESSENTIAL DUTIES AND RESPONSIBILITIES

- Investigate manufacturing equipment and ensure that delivered equipment meets and performs components such as monitors, keyboards, printers, disk drives, system software, and network interface cards.
- Locate installed software packages such as operating systems, network client drivers, and application programs such as computer-aided design and system software, network system software and various control system operations.
- Apply software updates and test in operating systems, network client drivers, and application programs.
- Assess client inquiries in person and via telephone concerning system operation. Diagnose system hardware, software, network, and user problems. Recommend or perform minor remedial actions to correct problems. Evaluate major hardware, software and network problems to higher levels, monitor problems to ensure timely and adequate response from higher level supporting activities.

### REQUIRED SKILLS

- Able to define, implement, and optimize IBM and Microsoft DOS environments on local platforms.
- Able to define, implement, and optimize Microsoft Windows environments on local platforms.
- Able to define, implement, and optimize Novell Network 3.11 and DOS client drivers on local platforms.
- Able to diagnose and resolve hardware and software conflicts on rear platforms running DOS, Windows, and Network.

### OTHER SKILLS

- Novel Network server administration skills are a plus.
- Microsoft Office configuration, installation, and optimization skills are a plus.
- IBM AS/400 PC Support configuration, installation, and optimization skills are a plus.
- Apple Macintosh System 7 configuration, installation and optimization skills are a plus.

Salary: Flat base from \$48,000

Applications preferred. Interested and qualified applicants should submit a letter of application accompanied by a resume with names of at least three (3) references to:

Line 1: Venc, S.E., Inc., Dept. for Personnel and Human Resources  
Community Center, 1000 North First Street, Suite 200, Chicago, IL 60607  
No Visa, No Agency  
An Equal Opportunity Employer



June 8-11, 1997  
Marriott  
Rivercenter  
San Antonio, TX



1-800-488-9204



**New Opportunities  
with fast growing  
software for MVS  
and OS/390**



**CrossPlex**

**Sales and Marketing** - if you have experience with large accounts you can write your ticket - hiring all new teams, so get in early - salary + commission.

**Customer Consultants** - if you know MVS systems (CICS, IMS, COBOL, C) you will love this travel opportunity.

**System Product Developers** - if you can develop in Assembler, Java, CICS, C++, HTML, you can relocate to beautiful low cost Oklahoma or work remote.

Send resumes to: J. Hunter  
SoftTech Systems, Inc.  
1390 S. Meridian  
Oklahoma City, OK 73106  
Fax 405/947-8169  
E-mail jgsales@softtech.com



**Find  
training  
now.**



**THESE  
POSITIONS  
AND MORE  
ARE  
WAITING  
FOR YOU**

project manager  
database administrator  
data analyst  
technical specialist  
NT consultant  
programmer analyst  
project leader  
MS certified trainer  
project manager - year 2000  
NT specialist  
unix systems administrator  
database administrator



<http://careers.computerworld.com>



## The Best of Both Worlds

Be an impact player in a global retail company while enjoying the benefits of Northwest Arkansas...family/fun. At work, enjoy a fast-paced environment full of non-monetary rewards, paying the road to innovation...then...At home, enjoy all the area's amenities, boating and fishing on any of our 9 lakes, polling on any of 24 golf courses, 25 miles to the University of Arkansas, Broadway plays at the Walton Art Center, and much more....

### INFORMATION SYSTEMS OPPORTUNITIES

Both entry level and experienced professionals are encouraged to apply for positions using:

- UNIX - C, C++, Administration, Engineering, Powerbuilder, Informatica DBA's
- PC Workstation- VB, V C++, NT, SQL Server, Java
- IBM Mainframe - COBOL, CICS, DB2 & IMS DBA's
- Networking - Ethernet, VSAT, Frame Relay, ATM
- Telecommunications.

**WALMART**

WALMART Information Systems Division  
American Recruiting Department 520452W  
702 S.W. 8th Street, Bartlesville, AR 72714-9038  
Call toll free: 1-888-695-4020  
Fax: 918-373-4879  
E-Mail: [recruit@wal-mart.com](mailto:recruit@wal-mart.com)  
[www.walmart.com](http://www.walmart.com)

## JOBS!

We have the largest selection of jobs the WEB has to offer! DICE has thousands of contract and full-time listings for Programmers, Analysts and Technical professionals to fill open positions for companies nationwide.

What's even better - we're FREE, providing detailed information so you can find the right contract or full-time position in your area AND your area of expertise. Take a look for yourself. Please contact DICE at [www.dice.com](http://www.dice.com) or telnet [dice.com](tel:dice.com) or call up our BBS, using your computer & 1200-28.8 baud Modem, 8-N-1.

ONLINE 515-280-3423  
INTERNET telnet:dice.com  
**www.dice.com**

DATA PROCESSING  
INDEPENDENT  
CONSULTANTS  
EXCHANGE



Don't gamble with your job search. Use DICE.

A Service of DAL Online, Inc. 515-280-1144

# Recruit '97.

Technically speaking,  
it's the best career move  
you can make.

## recruit97

THE HIGH TECHNOLOGY CAREER EXPO

at Jacob K. Javits Convention Center • New York City  
Tuesday, June 17 & Wednesday, June 18 • 10 a.m. - 5 p.m.  
Thursday, June 19 • 10 a.m. - 4 p.m.

Excellent full-time &  
consulting opportunities  
available with  
the nation's leading  
technology and other  
high-profile companies.



Recruit '97  
held in  
conjunction  
with PC EXPO

RECRUIT '97 CURRENT AND  
PAST EXHIBITORS INCLUDE:

Adobe	IBM
ADC Telecommunications	IBM Office
Aerohub	Isocom
AG	Information Builders
AIIT	Ingersoll Rand
Arthur Andersen	Insight
AT&T	Intel Corporation
Aven Products	Judge Technical
B&M Associates	Lockwood Martin
Bluewave	Lucent Technologies
Bose-Alben & Harrellson	MC Systems House
Burlington Northern	Merrill Financial
Cardiac Corporation	Microware
Cheyenne Software	Microsoft Corporation
Chubb Computer Services	Oracle
Cisco	Paver Systems
Compaq Computer Corp.	Price Waterhouse
CompuUSA	PrimeCa
Computer Associates	Prudential
Computer Systems Develop.	SHL An MCI Company
Comsys	Smith Barney
Coopers & Lybrand LLP	Software Quality Partners
CSS	Software Solutions
CLIG (Computer Task Group)	Software Spectrum
Datasync	Source Systems Corp.
Desktop Systems	Sprint
Diagnose Corporation	Sybase, Inc.
Dialog On Line	Tangent International
Dun & Bradstreet	Technology Edge
EDS	Unisys Corporation
Ennet Information Systems	Vanguard Group
Ernst & Young	Veritas Telecomm
Excel Communications	Volt Services Group
Gartner Group	...and more

- **ANALYSTS** two years of industry experience
- **Free admission with resume**
- **To pre-register for the show, visit our Web site at <http://www.recruit97.com>**
- **To be listed on the Recruit '97 National Job Database, mail or e-mail your resume to:**

**Mail:** Recruit '97  
c/o Miller Freeman, 11th floor  
One Penn Plaza  
New York, NY 10119

**E-Mail:** [resume@cmcrn97.com](mailto:resume@cmcrn97.com)

### OFFICIAL SPONSORS

CAREER Magazine

**COMPUTERWORLD**  
The Necessity for Information Technology Leaders

CMP

Computer  
**ResellerNews**

THE WALL STREET JOURNAL

**Miller Freeman**

Recruit '97 is produced and managed by Miller Freeman, Inc.  
One Penn Plaza, New York, NY 10119  
800-829-3976 or 212-914-1300 • Fax: 212-914-8801  
Photographic taken of you at the show may be used for promotional purposes. Your badge is non-transferable and will be confiscated and terminated upon any attempt to register as well as if you don't be 18 years of age or older to attend.

FOR EXHIBITOR INFORMATION, CALL 800-829-3976, EXT. 2940.



## IT CAREERS

JOIN THE ELITE TEAM AT LOCKHEED MARTIN

Lockheed Martin is an equal opportunity employer

### SOFTWARE ENGINEERING OPPORTUNITIES

#### SOFTWARE

- C-130J Software Development
- F-22 Software Development
- F-22 Computer Architecture/ Operating System
- F-22 Computer Resources Engineer
- F-22 Flight Test Software—Develops and maintains F-22 Flight Test Data Processing Hardware and Software Systems. Requires BSCE and 2+ years' engineering experience. Knowledge of DBC, VAX, VMS, C, and Oracle required. Job assignment is for a 9 month period in Marietta, GA, followed by at least 3 years' at Edwards AFB for Flight Test activities.



#### AIRCRAFT SYSTEMS ENGINEER

#### ELECTRONIC SYSTEMS ENGINEER

#### OPERATIONS RESEARCH ENGINEER

#### OPERATIONS SOFTWARE ENGINEER

#### SIMULATION SYSTEMS ENGINEER

#### SIMULATION SYSTEMS

#### LEAD ENGINEER

#### SYSTEM SOFTWARE

#### REQUIREMENTS ENGINEER

### SIGN-ON BONUS AVAILABLE FOR SOFTWARE ENGINEERS

#### Positions also available for contract engineers

Applicants selected will be subject to a government security investigation and must meet eligibility requirements for access to classified information.

Located in Marietta, Georgia, only minutes from Atlanta, our employees can enjoy the benefits of living in a small, southern town while having the advantages of an international city close by. We offer excellent salaries and a comprehensive benefits program, including company-paid relocation. Please forward resume, including salary requirements and position of interest, to: Dept. 458, 7777 Peachtree-Dunwoody Rd., Suite C-175, Atlanta, GA 30342-1865. For more information on Lockheed Martin employment opportunities, <http://www.careers.lockheed.com> or <http://www.lockheedmartin.com>

Lockheed Martin is an equal opportunity employer

LOCKHEED MARTIN

Mission Success



<http://careers.computerworld.com>



# Find training now.

Imagine the time saved if you could search one solid database of I.T. Now you can by simply accessing Release 1 of CareerAgent:

[careersagent.computerworld.com](http://careersagent.computerworld.com)

While you're there, check out the preview of upcoming CareerAgent releases. They'll allow I.T. professionals, individually or through corporate subscriptions, to assess learning styles, establish career goals, calculate individual, group and department skill gaps with an intelligent decision support system, and focus a training search based on priority.

The point? Every individual on your team has an idea of their career plan, and knitting these plans together can benefit corporate goals. Think about your current team today. Do individual career plans in your organization seamlessly benefit from available projects? Training resources? Corporate goals? Is this information connected to cost-effectively reskill and retain staff? It's all possible with CareerAgent, where management and staff can collaborate to continuously develop a career "itinerary" for each individual. On the Internet or your intranet. Your choice.

For details, see [careersagent.computerworld.com](http://careersagent.computerworld.com) or call 1-800-343-6474, x6000 today. And make every career on your team what it should be: a well-planned journey of enrichment.



See From:  
**COMPUTERWORLD**

Copyrighted by a trademark of COMPTON/PERKINS and International Data Group



# BE AN INNOVATOR.

As an IT professional—you cannot afford to let your skills go stale. At IBM, we appreciate and respect this need. That's why our primary focus is technical... pure and simple. While IBM continues to be a large investment at IBM, it pays in comparison to the investment we will make in you. Just as sure as the following:

## IMMEDIATE C/S-BASED OPPORTUNITIES:

- Technical Project Manager/leaders
- Technical Specialist/Systems Analysts
- Systems Architects/Programmers/analysts
- Programmers

All opportunities require multi-platform experience in one or more of the following: MAINFRAME, IBM AS/400, IBM DB/2, IBM DB/2, COROL, COROL II, CICS, APS, IDMS, ADAMS/NATURAL, CLIENTS/SERVING, TECHNOLOGY C++, C, UNIX, ORACLE, ORACLE 3000, SYBASE, PowerBuilder, Windows/PC Visual Basic, REP 3.1, COBOL, FORTE, GDL and SQL.

In return for your contributions, you will receive competitive compensation and full benefits. Inquiries at all levels are encouraged. For immediate consideration, please forward a resume to John B. Nyman, Vice President - Recruitment, at our Corporate Headquarters: INFORMATION MANAGEMENT RESOURCES, INC., 2678 U.S. Highway 19 North, Suite 500, Clearwater, FL 34615. Fax (813) 791-8123; E-mail to nyman@imr.com. Equal Opportunity Employer.

IMR (NASDAQ: IMRS)

is on the fast track.

Opportunities may be

available in the U.S.,

Europe, and India. To

learn more, visit our

web site at: [www.imr.com](http://www.imr.com)



• Chennai • Dallas • Chicago • India • London • Bangalore, India •

# SAP

ALL  
ODULE

1975 North Park Place  
Atlanta, GA 30339  
800-599-9550  
770-953-1714  
FAX: 770-953-0423



STRUCTURED  
LOGIC  
COMPANY, INC.

SAP NATIONAL

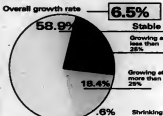
<http://careers.computerworld.com>



## Career Survey: Medical

### Regional Growth Analysis

### Industry Hiring Trends



Survey Base: 318 Technology Firms Involved in Medical

Survey conducted between March 97 and May 97



CareerTech, a division publisher in Wolcott, Mass., tracks the U.S. 40,000 technology manufacturers. This survey relates to the 31,327 medical firms with fewer than 1,000 employees.

## INFORMATION SECURITY OFFICER

Mayo Medical Center in Jacksonville, Florida has a career opportunity for a self-starting individual in the field of technical information and computer security. The organization employs a client-server architecture with high-speed network connections to affiliated practices across the area and major group practices in Arizona and Minnesota. Areas of responsibility include assisting in the development of a secure network infrastructure, applications, an electronic medical record and remote access program. The incumbent will work closely with the Foundation Data Security Officer, the information security officer and personnel in the areas of networks, messaging, remote access and electronic data interchange.

The successful applicant will possess a bachelor's degree, knowledge of VMS, UNIX, and prior work experience in the areas of secure authentication, encryption and implementing security methodologies. Effective written and verbal communication skills are essential, as is the ability to work effectively in a large organization with minimal supervision.

Mayo Medical Center, Jacksonville is comprised of St. Luke's Hospital and Mayo Clinic Jacksonville. The hospital is a 300 bed tertiary care facility which houses an active community-based physician staff and the Mayo Clinic Physicians Mayo Clinic Jacksonville is a large group medical practices which employs over 180 physicians and over 2,000 paramedical staff on the two campuses. As part of the Mayo Foundation for Medical Education and Research, it has access to world-renowned medical and graduate schools, several health science related schools and an extensive research department comprised of many individual laboratories. The college atmosphere welcomes those wishing to work and provides ample opportunity for personal and professional growth.

Please send cover letter and resume to Mayo Clinic/St. Luke's Hospital, Human Resources, 4051 Belfort Rd., Jacksonville, FL 32216, FAX (904) 296-4658 or E-Mail: careers@mayo.edu

Equal-Opportunity Employer



Fast-growing national and international consultancy with a reputation for first-class consultants offers world-wide career opportunities for top-quality professionals.

- Experienced project managers \$180K+
- Team leaders \$150K+
- Consultants \$100K+

**spearhead™**  
Retail

Competitive compensation with performance incentives for strong professionals with deep experience; comprehensive benefits package.

# SAP PROFESSIONALS



**CURRENTLY STAFFING PROJECTS IN:**

US, Canada, South America, Pacific Rim, and Europe. We are seeking professionals in all modules, ABAP and Basis with industry experience in the Retail environment to join Spearhead's SAP Retail Team.

**SPEARHEAD SYSTEM CONSULTANTS (NS) LTD.**  
SAP® National Implementation Partner

90 Seawall Blvd., Suite 340  
Port Washington, NY 11090  
voice 516.625.9000 fax 516.625.9667

90 Broad Street  
New York Information Technology Center  
New York, NY 10004  
voice 212.966.1348/1349 fax 212.966.1352

1.888.spearhead  
www.spearhead.com

Send resume to the Attention of Recruiter Manager  
SAP is a Registered Trademark of SAP AG.



## NATIONWIDE CONTRACT & PERM

Any and all skills are of interest to us with immediate positions for the following:

- OS/400 MVS and MVS "A" series, HP/PA, Peripherals
- UNIX/SCO/386/486/686
- SAS/VS/NT/AT/IBM client server, all models
- PC/OS/2/NT/AT/IBM, HP/PA, CL, HP A/E

We specialize in finding and HP/PA packaged software solutions. Sales in 15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/00/01/02/03/04/05/06/07/08/09/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/2

Let **COMPUTERWORLD**  
help with your  
**I.T. salaries**

The industry's most authoritative resource  
for setting I.T. salaries is now available on disk.

Computerworld's 10th annual  
**Salary Survey** on disk  
reveals the salaries of  
27 I.T. positions, by  
21 industries and  
9 regional breakouts.



Also included is  
Computerworld's  
**Skill Survey**


- Learn the premiums I.T. managers are paying for specific I.T. skills.
- How are full-time and contract workers being paid for the same skill?
- Which skills are in the highest demand?
- Over 80 skills are listed including languages, development tools, client/server applications, system software, groupware, networking and more. Each broken out by 20 industries and 9 geographic regions.

price: **\$349**

to order, call **1-800-500-7460**

This Web site

e-mails  
you with the  
career opportunities  
you want.



Careers

Register today and  
use CAREERMAIL

<http://careers.computerworld.com>

itCareers.

Where the careers find you.

For information  
advertising,  
call 203-857-5100

# Marketplace

## NEW & NOTABLE

### Notebook Thieves Beware: Port, Inc. Announces Notebook Computer Security System "DEFCON 1"

DEFCON 1 is a security system that includes a motion detector and is versatile enough to attach directly to a carrying case or the lock slot found on 95% of notebook computers, offering the ultimate in notebook security for the business traveler or office worker who uses a portable system. The lightweight but rugged security system consists of a 4.7 foot cable, combination lock with up to 1000 possible user selections, microprocessor, 360 degree motion sensor and a 110 Decibel alarm. The motor retracting, cut-resistant steel cable can be placed around the handle of a notebook carrying case, or utilizing an adapter, directly into a notebook's security lock slot. The

adapter for the notebook's security lock slot is included.

Once the system is armed, the motion sensor operates on a time-delay basis. Three loud chirps warn of unauthorized movement, immediately after the device is shifted, shaken or lifted. If the movement was accidental, the owner can disarm the unit with the correct combination. If not disarmed, a 110 Decibel alarm will sound, alerting the owner that the case or notebook is being stolen. The alarm also sounds automatically if the cable is cut. Small enough to fit in a pocket and weighing only 6.2 ounces, the DEFCON 1 is convenient to carry and store. The impact resistant

housing includes an LED indicator light on the outside of the device alerting would-be thieves of the alarm as well as alarm status. The system operates on one 9-volt battery, which is inaccessible once the lock is engaged. The system has a battery life of 90 days with an alkaline battery with the lock connected.

DEFCON 1 Notebook Computer Security System, available in November can be purchased from the company's extensive network of resellers or from PORT direct at 800-242-3533 or visiting our web at <http://www.port.com>. The direct price for the DEFCON 1 is \$49.95. Reseller prices may vary.

### www.suppliesonline.com Computer and Printer Supplies from the Internet to Your Door

SuppliesOnline is an exciting new concept for purchasing office automation supplies instantly and conveniently over the Internet. Not only does SuppliesOnline offer ordering convenience, they provide free next day delivery and customer service that is second to none. SuppliesOnline can sell for less, and they do!

No longer do consumers have to "run down to the office supply store." Online shoppers can browse through SuppliesOnline's Virtual Warehouse, filled with over 10,000 products valued at more than \$100 million, in a matter of minutes. End users may research and purchase directly from their computer 24 hours a day, 7 days a week. "The thought of being able to find the items you want, place the order (by 4:00 p.m. CST) and have it drop-shipped directly to your door, freight free, the next business day is incredible," says Tim Weis, president of SuppliesOnline.

When you place secured order with SuppliesOnline, it is automatically verified and authorized. It is then processed by an "off-line" accounting server and the orders are sent electronically to supply vendors. The order is then drop-shipped directly to the customers door. There is no other more efficient form of distribution.

Just as the Internet has evolved, so will the way consumers buy their computer supplies. Contact Ann D. Feischer toll free: 800-464-1668, fax: 972-464-6136 e-mail: [info@suppliesonline.com](mailto:info@suppliesonline.com), [www.suppliesonline.com](http://www.suppliesonline.com)



\$25.00  
CASH

WIN EVERY WEEK!



# Corporate America

Corporate America has a new look these days thanks to a *Fortune* 500 PC manufacturer from South Dakota. From a two-person start-up operation in 1985 to a \$5 billion global company in 1996, Gateway 2000 has taken the PC industry and corporate America by storm.

In fact, Gateway has done business with 8 out of 10 *Fortune* 1000 companies in the last three years. How did we do it? By delivering Value of Ownership: the winning combination of high benefits and low cost for the life cycle of your computer. Gateway delivers it all in high-quality PCs custom built for your business that go to work for you right out of the box.

Want to know more about this cow-spotted business phenomenon? Call Gateway 2000 today, because we mean business.



*"You've got a friend in the business."*

8 8 8 - 8 8 8 - 0 3 8 2

[www.gateway.com](http://www.gateway.com)

© 1997 Gateway 2000, Inc. GATEWAY 2000, black-and-white spot design, "G" logo, and "You've got a friend in the business" slogan are registered trademarks of Gateway 2000, Inc.

For information on  
advertising,  
call 203-857-5100

## Marketplace

### Distinct IntraNet Servers

The Easiest Way to Manage Users and Network Resources



#### Highlights:

- Includes all major TCP/IP based file and printer servers in a single package: NFS Server, FTP Server, LPD, TFTP and BOOTP.
- Integrates seamlessly into Windows 95 and Windows NT
- Password protected login for all servers
- Also available for Windows 3.1.



Free  
Evaluation Copy  
Available at...



**distinct**

→ <http://www.distinct.com>  
sales@distinct.com  
Phone: 1-408-366-8933  
Fax: 1-408-366-0153

### Distinct IntelliTerm



#### Highlights:

- TK3270 Emulation—Models 2,3,4 and 5 (for IBM Mainframes)
- 3179G Vector Graphics & 3279S3G
- TN5250 (24x80, 27x132) (for AS400)
- VT52, VT100, VT220, VT320 & VT420 emulation (for DEC and UNIX Systems)
- Customizable keyboard layouts, popups and session profiles
- YBA™ Advanced Scripting Language
- DBE, HLLAPI, EXHLLAPI, WinHLLAPI and Visual Basic™
- Available for Windows 3.11, Windows 95 and Windows NT

Free  
Evaluation Copy  
Available at...



**distinct**

408.366.8933  
→ <http://www.distinct.com>  
Fax: 408.366.0153  
E-mail: [cworld@distinct.com](mailto:cworld@distinct.com)  
Sales: 408.366.2181

### NetCom 3 Connectivity Without Clutter.



A product of  
**CCP**  
engineered  
data products

Linking People and Technology

COMPANY INFORMATION  
NetCom 3 is a product of CCP  
Engineered Data Products  
10000 E. 1st Avenue, Suite 100  
Denver, CO 80231  
Phone: (303) 733-1111  
Fax: (303) 733-1111

10000 E. 1st Avenue, Suite 100  
Denver, CO 80231  
Phone: (303) 733-1111  
Fax: (303) 733-1111  
Web Site: [www.ccpe.com](http://www.ccpe.com)

### Start Saving Thousands of Dollars Today!

Routes faxes  
to standard fax  
machines -  
for FREE!

Utilizes  
Windows® 95  
address book

Allows you to  
re-fax, print or  
save faxes for  
future use

**FAxfree™**  
On The Internet



Developed for  
Windows 95,  
FAxfree enables  
users to send  
faxes anywhere in  
the world at little  
or no cost.

FAxfree offers the  
convenience of  
conventional fax  
systems without  
the associated  
long distance  
phone charges.

Transmit scanned  
images, charts,  
bar graphs, draw-  
ings, and spread-  
sheets easily and  
affordably!

Black & White

Now In  
**COLOR**

Only  
**\$49.95**

To Order Now, Visit  
<http://www.tacsystems.com/cw>  
Or Call: 800-659-4440

Only  
**\$29.95**

FAxfree is a registered trademark of TAC Systems, Inc. Other brands are trademarks of their respective owners.  
TAC Systems is not responsible for third-party errors. ©1997 TAC Systems, Inc.

# Marketplace

For information on  
advertising,  
call 800-857-5100

## 12X CD-ROM Tower

- ◆ TCP/IP, IPX
- ◆ Plug & Play
- ◆ Novell, NT, UNIX, NFS
- ◆ 7 CD-ROMs
- ◆ Built-in Server
- ◆ Factory Direct
- ◆ Ethernet (Token Ring available)

Net Windows  
NTFS  
CD-ROM

See our complete line of storage products at:  
**www.tacsystems.com/cw**  
**(800)-659-4440**

**TAC**  
Managing Information Through Innovation

**LANRedi**

Comments for your best network's in redundant the server standard

TAC Systems Inc., an L3 Corporation, is a subsidiary of L3 Communications Corporation, 10000 L3 Drive, Suite 100, San Diego, CA 92121. L3 is a registered trademark of L3 Communications Corporation. © 1997 L3 Communications Corporation. All rights reserved.

### Maridian Marketing Group

- Experts in Internet Marketing with 5 Years' Experience
- Designing Interactive/Intrabyte Marketing Campaigns
- Daily / Nightly E-Mail Broadcast

800-810-1117

400-810-1117

10000 L3 Drive, Suite 100, San Diego, CA 92121

Aut 5/97

Graphic designer with 20 years of creative experience available to consult with developers about the visual design of their apps and sites.

Can't write a line of code. Just use experienced artist/digital graphic designer. Can provide app or site through development and final design services. Will make screens and graphic elements dynamic & orderly (perhaps involving animation if...), copy, and all other...  
w/ samples at:  
[www.kristine.com/visual](http://www.kristine.com/visual)

### Off-shore custom programming Local custom project management

600 experienced, degreed, programmers in India complete projects at 25-50% less cost. On-site project managers ensure applications deliver the results you need. To get you what you need, our project managers:

- One-plus • One-communication • One-engineer • One-time • One-deliver

We deliver your documentation first to ensure your application does what you want, in the way that you need it — before the coding begins. Experienced in mainframes, client-servers and PCs. Everything from retail and direct-mail to financial and manufacturing, and, of course, Year 2000.



Intelligent Systems

875-427-5561 FAX 875-427-5562 [www.intelligent-systems.com](http://www.intelligent-systems.com)

**SPECIAL ADVERTISING SECTION: PREPARED BY THE ADVERTISING DEPARTMENT.** This section is the responsibility of the advertiser. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department.

**CONSUMER PROTECTION:** All consumer protection is the responsibility of the advertiser. All consumer protection is the responsibility of the advertiser. All consumer protection is the responsibility of the advertiser. All consumer protection is the responsibility of the advertiser. All consumer protection is the responsibility of the advertiser.

**THE ADVERTISING DEPARTMENT:** The Advertising Department is the responsibility of the advertiser. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department.

**THE ADVERTISING DEPARTMENT:** The Advertising Department is the responsibility of the advertiser. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department.

**THE ADVERTISING DEPARTMENT:** The Advertising Department is the responsibility of the advertiser. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department.

**THE ADVERTISING DEPARTMENT:** The Advertising Department is the responsibility of the advertiser. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department.

**THE ADVERTISING DEPARTMENT:** The Advertising Department is the responsibility of the advertiser. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department.

**THE ADVERTISING DEPARTMENT:** The Advertising Department is the responsibility of the advertiser. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department.

**THE ADVERTISING DEPARTMENT:** The Advertising Department is the responsibility of the advertiser. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department.

**THE ADVERTISING DEPARTMENT:** The Advertising Department is the responsibility of the advertiser. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department.

**THE ADVERTISING DEPARTMENT:** The Advertising Department is the responsibility of the advertiser. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department.

**THE ADVERTISING DEPARTMENT:** The Advertising Department is the responsibility of the advertiser. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department. All ads are subject to the rules of the Advertising Department.









Storage: the world's information goes

## Hot Shot.

"The CIO said, 'let me see if I've got this straight. You're saying you can implement a worldwide storage system that will actually increase the company's performance and reduce costs?' Without skipping a beat, I said yes. And without skipping a beat, he said, 'you have sixty days to show me how.' I remember the day Storageltek® presented their recommendations. Because that was the first night I actually got some sleep."

Call Storageltek today at **1 800 786-7835**. Or visit us on the Web. Because in this world of multiplatform computing, the right choice in storage can mean the difference between proving yourself every day — and proving yourself once and for all.



## COMMENTARY

## The macro world beyond viruses

David Coursey

**J**ust about the time computer viruses seemed pretty much in check, along comes a new wrinkle: Java and ActiveX programs capable of doing damage on a scale a mere virus never could achieve. Sure, a virus can wipe out your hard drive, but can it first E-mail selected contents of your drive to a competitor?

I've been lucky. In the past 16 years, I've been hit by a virus perhaps twice (and only on a Macintosh), resulting in loss of downtime but no data loss. I didn't count the Word macro viruses in that total. They caused some brief anxiety but no real problems — especially after the Microsoft supplied fixes were installed.

Still, it was enough anxiety that I recently installed virus-checking software (I use Norton) on all the machines in my office. I did it mostly to solve the macro virus problem, but also because I don't have the control over the office machines that I once had.

So, I don't have much reason to fear viruses, but I am fearful of Java and ActiveX. I've always suspected that antivirus

software publishers and virus creators were somehow in league with one another. Certainly, it's been a symbiotic relationship: Like a good parasite, the viruses never got so out of control that they killed their hosts — at least not in large numbers.

The Java and ActiveX cybervandalism, I'm not so sure about.

My understanding — admittedly based on discussions with vendors building antivandalism software — is that both Java and ActiveX need a crafty programmer the tools given to do all sorts of

damage before a user would notice. An easy delivery mechanism would be to send the soft-vandal code to the unsuspecting victim.

So while you're looking at a Web site, the vandal applet is erasing files, changing your spreadsheets or putting kiddie porn on your hard drive and sending a helpful "warning message" to your boss and the police.

Several software companies — among them, Finjan, Inc.,

whose U.S. office is in Santa Clara, Calif., Cybermedia, Inc. in Santa Monica, Calif., and Eli-Shim Microcomputers, Inc. in Pembroke Pines, Fla. — have built first-generation tools for preventing this. Each company takes a different approach, and the threat is so new that

it's impossible to say which approach offers the best trade-off between protection and problems. By this time next year, I expect every virus checker to come with an antivandalism program as well.

But I have a better idea: Let Bill and

Scott do it! I'm sure you remember when Sun was touting how secure and virus-free Java would be. Well, it's not working out that way, so why don't you let Sun boss Scott McKinley solve this problem?

And while I don't remember Bill Gates saying anything about ActiveX not being a tool for evil, it certainly is in his best interest to make sure his Active Server Pages, Dynamic HTML, and the other buzzwords of the week don't end up eating customers for lunch.

So no, I'm not running Finjan's SurfinShield, Eli-Shim's E-Safe or Cybermedia's CyberWall. And I don't plan to anytime soon. My personal assessment of the risks involved and the stability of some of the code we've tested is that the cure is, for now, worse than the disease.

But I have to wonder: When will companies that seek to control our desktops and servers stop to think about — and deal with — the unintended consequences of their latest, greatest "advance"? □

Coursey, an analyst and consultant, is editor/publisher of "coursey.com," an online newsletter available at [www.coursey.com](http://www.coursey.com). His E-mail address is [david@coursey.com](mailto:david@coursey.com).

## When tools get tough, users get tougher

Frank Hayes

**S**ome users never quite figure out how to use their tools, whether from the IS department or somewhere else. Those people can be pretty irritating. But they're nowhere near as irritating as the users who master their tools to perfection.

A case in point: At Computerworld, we're designing a new editorial production system. The new system will replace the antiquated bucket of bits we use to get the news to you every Monday.

The current system was cutting-edge stuff around 1990. But a lot has changed since then: More reporters are spread across the country, the Internet is the communications standard, and graphical software is the standard — period. Our character-based system has been patched and hacked to accommodate those shifts, but now it's time for a clean slate.

You might think Computerworld's best and brightest editors and reporters would be fighting to get the latest, greatest, newest and shiniest whiz-bang system the budget could bear, right?

Wrong. What they want most is something that's as much like the existing sys-

tem as possible. Except they don't want it to crash as much.

Sure, go ahead and snicker. The same people who champion better, more effective technology in these pages each week are reluctant to hold-the-line Luddites when they face change as users.

The problem is, these highly productive users know the current system can't. They can make it dance and sing.

A new system just means lots of extra work learning new procedures and breaking old — and highly productive — habits.

In other words, because they're becoming so good at using the old tools, they

have the most to lose from something new.

Sound familiar? Remind you of those top salespeople who don't want to drop their Day-Timers in favor of your new sales automation software? Or those programming wizards who wouldn't dump their favorite text editors when you wanted to standardize on an integrated development environment?

Those people are your top producers, your company's cream. But part of the reason they're great at what they do is that they've mastered their tools.

Change those tools and you threaten their effectiveness, their efficiency. And that's when your company's best employees can become your worst nightmare as they fight tooth-and-nail against change.

Why? New systems don't just make and sell products and services. Users do. That's where profits — and IS psychobots — come from. And the users who generate the most profits wield the most clout. When they howl, management listens. When they make a stink, management

makes accommodations — which can wreak havoc on your plans for a new system.

So what can you do? Find those clout-heavy users. Romance 'em. Bring 'em on board.

Track down the hotshots — no, they won't be among the volunteers struggling with test versions of your applications — and find out what's important to them. Listen carefully, and make sure they know you're listening. Then sell them on every advantage the new system has to offer.

If that's an irritating prospect, just remember: Your job isn't just to build systems, it's to make them work. The most productive users are the people who will make or break a new system's success. Making them happy is as crucial as adding functionality and stamping out bugs.

There's no either/or — you've got to have it both ways. Because if it comes down to choosing between the users and the people who actually make money for the business, you know what choice your upper management will make. □

Hayes is Computerworld's staff columnist. His Internet address is [frank\\_hayes@cw.com](mailto:frank_hayes@cw.com).



## The Back Page

## altcw

Disparities &amp; images from the fringes of the tech world frontier

## Digital archive

10 YEARS AGO  
(JUNE 1987)

- Microsoft sells its 500,000th mouse.
- College dropout Bill Gates, 31, becomes the youngest billionaire in the U.S.
- Computer Associates buys Uccell for nearly \$800 million to become the largest independent software vendor.

20 YEARS AGO  
(JUNE 1967)

- Headline: "Gap between management, DP still a problem, NCCers told"
- The Apple II becomes available to the general public.
- Headline: "Intelligent terminals have heyday at recent NCC"

30 YEARS AGO  
(JUNE 1957)

- The first issue of Computerworld is eight pages.

## TELESENSORY PERCEPTION

Oak Ridge National Laboratory in

Oak Ridge, Tenn., is developing

"medical teleensors"—tiny

chips applied to the skin to

measure body temperature

and other vital signs and

transmit the data via radio

signals. The first applica-

tion is to help medica-

l treat wounded soldiers.



## The best postings are humorous

Cyberspace is often viewed as cold and humorless. But a study in the electronic journal of *Computer-Mediated Communication* (jcmc.hawaii.ac.il) says humor is prevalent and highly valued in online communities. Nancy K. Baym, who studied Usenet's rec.arts.tv.soaps newsgroup, says humor helps establish individuality and group solidarity.

## Inside Lines

## Did you say... EXECUTE?

After telling conference attendees about IBM's remarkable return to profitability since Lou Gerstner took control four years ago, one IBM executive admitted that "if the news here, Lou Gerstner would give us [only] a B-minus. He's very impatient, and he has a right to be." Gerstner consistently presses underlings to make IBM even leaner and meaner, and he makes it clear that anyone who spends too much time arguing or analyzing won't be around long. "The focus is on execute, execute, execute," the executive said, "remembering that there's two interpretations of that word."

## Waiting for Perot

The word on the street is that New York commodities giant Salomon Brothers is close to outsourcing a significant portion of its IT operations to Perot Systems in Dallas. Sources close to Salomon said the company has had trouble managing its distributing computing operations ever since it began shifting from a predominantly mainframe environment in the early '90s.

## Apple plays hardball with clone makers

Apple insiders said the company is giving itself a leg up on Macintosh clone makers by insisting that it be allowed to certify all new hardware designs. But Apple already has plans to release two high-end Power Macintoshes later this year that use new PowerPC chips. Sources said the company's attempts to stay a step ahead of the clones isn't new. Apple has yet to certify any Macintosh clones that use the new high-speed 603x CPUs. Apple is ready to ship its own systems based on that microprocessor later this month. The largest consumer of PowerPC chips also is reportedly trying to strong-arm IBM and Motorola into giving it priority over any other Macintosh clone makers.

## PointCast slims down its 'handwidth hog'

PointCast today is expected to announce Version 3.0 of its server software, designed to make the service work better on corporate networks. Network administrators complain that the "push technology" news service, which beams news updates directly to users' desktops, is a bandwidth hog. PointCast plans to address that with new features designed to speed throughput and provide additional controls on how and users use the software.

## Film at 11

What do you get when you put outspoken Oracle CEO Larry Ellison and mercurial CHN founder Ted Turner in the same room? A potential clash of two of the biggest egos in U.S. business. The duo will appear at Comdex this week to announce a broadcast/cable entity designed to compete with MSNBC. Stay tuned.

## Robbing Peter to pay Paul

Computer distributor CompuCom Systems cut the number of 15 staffers who generate paper reports for its customers and suppliers from 10 to 1 by building a data warehouse and making some types of information available via the Web. Sounds like instant return on investment, you say? Not so fast. "Of course, now we have to go people working on the data warehouse," said Darrell Platt, CompuCom's warehouse point man, during a presentation at a Chicago conference last week. Funny how things even out like that.

## Up, up and away ...



Thrill-seekers can safely and legally go hang gliding over the Grand Canyon or city skyscrapers in Virtual Glider, a virtual-reality entertainment system developed by Evens & Sutherland in Salt Lake City.

When Microsoft mogul Bill Gates was in Silicon Valley last week, he took another shot at the nemesis of his global dominance plan—network computers. This time, he said network computers are incompatible with PCs. Unable to restrain themselves from spitting back, Sun officials responded: "The last time we checked, Win 95 apps weren't necessarily compatible with Windows NT..." Touché! If you've heard any bon mots from Bill Gates, or any other interesting news for that matter, contact news editor Patricia Keefe at (908) 820-8181 or patricia.keefe@cw.com.



## The Back Page

## altcw

Dispatches &amp; rages from the fringes of the tech world

## Digital archives

10 YEARS AGO  
(JUNE 1987)

- Microsoft sells its 500,000th mouse.
- College dropout Bill Gates, 31, becomes the youngest billionaire in the U.S.
- Computer Associates buys Uccell for nearly \$800 million to become the largest independent software vendor.

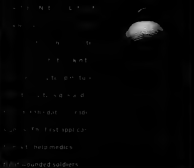
20 YEARS AGO  
(JUNE 1977)

- Headline: "Gap between management, DP still a problem, NCCers told"
- The Apple II becomes available to the general public.
- Headline: "Intelligent terminals have heyday at recent NCC"

30 YEARS AGO  
(JUNE 1967)

- The first issue of Computerworld is eight pages.

## TELESENSORY PERCEPTION



## The best postings are humorous

Cyberspace is often viewed as cold and humorless. But a study in the electronic *Journal of Computer-Mediated Communication* (jcmc.huji.ac.il) says humor is prevalent and highly valued in online communities. Nancy K. Baym, who studied Usenet's rec.arts.tv.soaps newsgroup, says humor helps establish individuality and group solidarity.

## Up, up and away ...

Thrill-seekers can safely and legally go hang gliding over the Grand Canyon or city skyscrapers in Virtual Glider, a virtual-reality entertainment system developed by Evans & Sutherland in Salt Lake City.

## Inside Lines

## Did you say... 1997?

After a year of... IBM's remarkable return to profitability... Microsoft's... 1997... IBM's remarkable return to profitability... Microsoft's... 1997... IBM's remarkable return to profitability... Microsoft's... 1997...

## Building for Power

The word for this year is... IBM's remarkable return to profitability... Microsoft's... 1997... IBM's remarkable return to profitability... Microsoft's... 1997...

## Apple plans hardware refresh strategy

Apple's... IBM's remarkable return to profitability... Microsoft's... 1997... IBM's remarkable return to profitability... Microsoft's... 1997...

## PalmPilot shows down the "PalmPilot bug"

PalmPilot... IBM's remarkable return to profitability... Microsoft's... 1997... IBM's remarkable return to profitability... Microsoft's... 1997...

## Flinch of IT

When it... IBM's remarkable return to profitability... Microsoft's... 1997... IBM's remarkable return to profitability... Microsoft's... 1997...

## Building Power to you, IBM

Computer... IBM's remarkable return to profitability... Microsoft's... 1997... IBM's remarkable return to profitability... Microsoft's... 1997...

When Microsoft mogul Bill Gates was in Silicon Valley last week, he took another shot at the nemesis of his global dominance plan — network computers. This time, he said network computers are incompatible with PCs. Unable to restrain themselves from spitting back, Sun officials responded: "The last time we checked, Win 95 wasn't necessarily compatible with Windows NT..." Touché! If you've heard any hot mots from Bill Gates, or any other interesting news for that matter, contact news editor Patricia Keefe at (508) 820-8813 or patricia.keefe@cw.com.



**.WORK THE WEB™**



## THE NEW WEB-TUNED LOTUS 1-2-3 HAS ARRIVED - WHY JUST CRUNCH NUMBERS WHEN YOU CAN CRUNCH COMPETITORS?

**INTRODUCING LOTUS SMARTSUITE™ 97 WITH THE NEW 1-2-3® 97.** The Web is not a toy. With SmartSuite 97, it can be a serious competitive advantage. Now, from inside any Lotus 1-2-3 spreadsheet, you can grab the most current market data for your sales forecast - red-hot off the Web. Then publish the forecast directly to a Lotus Notes® database and onto your company intranet. So, in this ruthlessly competitive world, you and your coworkers can be armed with up-to-the-second information that can help you do your jobs more effectively.

**THE FIRST OFFICE SUITE SPECIFICALLY DESIGNED TO WORK THE WEB.** SmartSuite 97 is web-conscious through and through. Each application lets you connect immediately to whatever information is vital to the task at hand. And each application makes it easy to publish your work onto the Net, empowering others to make the best decisions.

SmartSuite 97 also makes it easy to stay organized while you're staying up-to-date. The Lotus SmartCenter™ lets you create a personalized set of drawers in which you can stash all your sources of information, applications and files. Use the SmartCenter Internet drawer to get live access to news, weather, stock prices and more, straight from the Web. It's all about getting more stuff done and staying ahead of the competition. If not crunching them entirely. SmartSuite is now included with IBM® Aptiva®, ThinkPad® and PC desktops, as well as AST® Advantage PCs. For your free SmartSuite 97 trial CD, call us at 1-800-TRADE-UP, ext. CS02, or visit our website at [www.lotus.com/smarsuite](http://www.lotus.com/smarsuite).

**123<sup>97</sup>**

spreadsheet

WORD PAD®

word processor

APPROACH®

database

**FREELANCE GRAPHICS®**

presentation graphics

ORGANIZER®

"time management

SCREENCAM®

multimedia tool

**LOTUS**

Working Together™

Portions of SmartSuite are available for Windows® 95, Windows® 3.11 and OS/2® in Canada and 1-800-531-0702. © 1997 Lotus Development Corporation. All trademarks and registered trademarks are the property of their respective owners. All other names and product names are registered trademarks or trademarks of their respective companies.



SUPERCOMPUTING SOLUTIONS

# Protects coastlines, ozone levels, blood cells and future generations.



When Pacific Northwest National Laboratory, the National Institutes of Health and other leading research centers tackle problems of global proportions, they start with a powerful solution: the IBM RS/6000 SP. Its unique ability to perform large-scale computer simulations provides scientists and researchers with new ways to design lifesaving drugs, locate oil reserves, even clean up the surroundings — in less time and with less risk to the environment. And that benefits all of us. For a closer look at an RS/6000 solution to your complex science, technical or business problems, stop by [www.rs6000.ibm.com/solutions](http://www.rs6000.ibm.com/solutions) or call 1 800 IBM-2468, ext. FA060.

RS/6000 SP and RS/6000 are registered trademarks of International Business Machines Corporation. © IBM Corp. 1999. All rights reserved. IBM and the IBM logo are trademarks of International Business Machines Corporation. 100-000-000

Solutions for a small planet™

